ORDER NO. HAD8511289C0
A6

# Service Manual

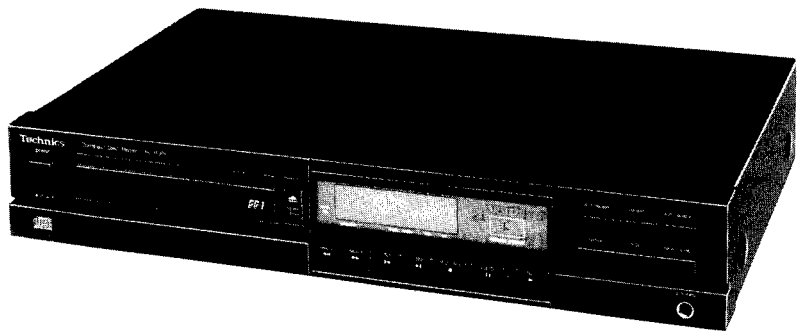
Compact Disc Player

# SL-P300

COMPACT disc DIGITAL AUDIO

DIGITAL

Compact Disc Player



**Color**

| |
|---|
| (K)....Black Type |
| (S)....Silver Type |

| Color | Areas |
|---|---|
| (K) (S) | [M].....U.S.A. |
| (K) (S) | [MC]...Canada. |
| (K) (S) | [E].....Switzerland and Scandinavia. |
| (K) (S) | [EK]....United Kingdom. |
| (K) (S) | [XL]....Australia. |
| (K) (S) | [EG]....F.R. Germany. |
| (K) (S) | [EB]....Belgium. |
| (K) (S) | [EH]....Holland. |
| (K) (S) | [EF]....France. |
| (K) (S) | [Ei].....Italy. |
| (K) (S) | [XA]....Southeast Asia, Oceania, Africa, Middle Near East and Central South America. |
| (K) (S) | [PA]....East PX. |
| (K) (S) | [PE]....European Military. |
| (K) (S) | [PC]....European Audio Club. |

06150494 91004988 35
SM-SLP300 1 ST
SVC MNL .. DOM/AC/PX/MM

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# ■ SPECIFICATIONS

## ■ Audio

**No. of channels:** 2 (left and right, stereo)
**Frequency response:** 4—20,000 Hz ±0.3 dB
**Dynamic range:** More than 96 dB
**S/N ratio:** More than 100 dB
**Harmonic distortion:** 0.0015% (1 kHz, 0 dB)
**Total harmonic distortion:** 0.003% (1 kHz, 0 dB)
**Channel separation:** More than 100 dB
**Wow and flutter:** Below measurable limit
**Low-pass filter:** High resolution digital filter

## ■ Signal Format

**Sampling frequency:** 44.1 kHz
**Correction system:** Technics Super Decoding Algorithm
**D-A conversion:** 16-bit linear

## ■ Pickup

**Type:** Fine-focus, one beam

FF-1

**Light source:** Semiconductor laser
**Wavelength:** 780 nm
**Traverse system:** High-speed linear access system
**Spindle system:** Brushless DD motor

## ■ Functions

**Automatic play:** All tracks.
**Random access play:** Track number or index number.
**Repeat play:** Entire disc or programmed tracks.
A-B block repeat play.
Program repeat play.
**Search:** Forward/backward track skip.
Forward/backward index skip (using remote control unit).
Forward/backward manual search.
**Program play:** For up to 20 tracks
Index programming (max. of 10 to 19).
**Display:** Total tracks.
Programmed tracks.
Current track.
Index numbers.
The following four time modes display minutes and seconds according to the time mode select button setting:
① Disc remaining playing time.
② Track number and remaining playing time of current track.
③ Disc elapsed playing time.
④ Track number and elapsed playing time from beginning of current track.
Programmed order when remote control recall button is pressed.
**Other functions:** Time display mode switching function.
Disc indicator.
**Disc loading:** Motor-driven horizontal type.
**Headphone output level:** 15 mW max. 32 Ω (fixed)

## ■ General

**Power supply:** For U.S.A. and Canada:
AC 120V/60Hz
For United Kingdom and Australia:
AC 240V, 50Hz
For Continental Europe:
AC 220V, 50Hz
For Others:
AC 110~127/220~240V, 50/60Hz
**Power consumption:** 16 W
**Output voltage:** 2 V (at 0 dB)
**Output impedance:** Approx. 600Ω
**Load impedance:** More than 10 kΩ
**Dimensions (W×D×H):** 43×26.5×7.7 cm
(16-15/16"×10-7/16"×3-1/32")
When disc holder is opened
39.7 cm (15-5/8") (D)
**Weight:** 4.2 kg (9.3 lbs.)

## ■ Infrared remote control unit

**Dimensions (W×D×H):** 6.5×15.5×1.8 cm
**Batteries:** UM-3 "AA" batteries or IEC R6 or equivalent (1.5 V×2)
**Remote control functions:** Numeric buttons (0 ~ 9)
Memory button
Clear button
A-B repeat button
Repeat button
Music scan button
Recall button
Index button
Time mode select button
Forward and backward index skip buttons
Forward and backward search buttons
Forward and backward skip buttons
Stop button
Pause button
Play button
**Weight:** 140 g (including batteries)

Specifications are subject to change without notice for further improvement.
Weight and dimensions are approximate.

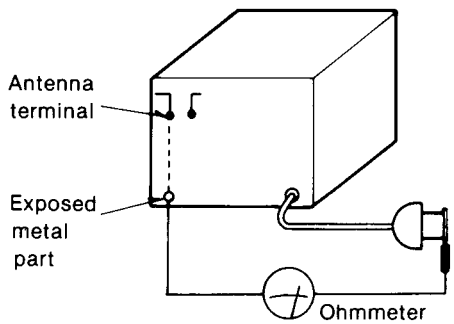
## ■ SAFETY PRECAUTION (This "safety precautions" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

### • INSULATION RESISTANCE TEST

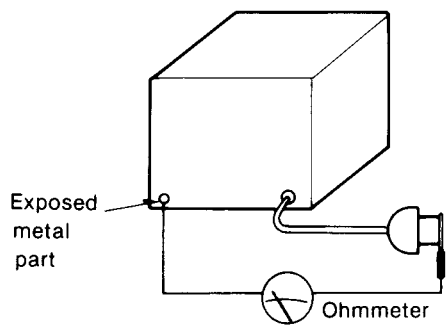
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.




(Fig. A)

Resistance = 3MΩ—5.2MΩ




(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

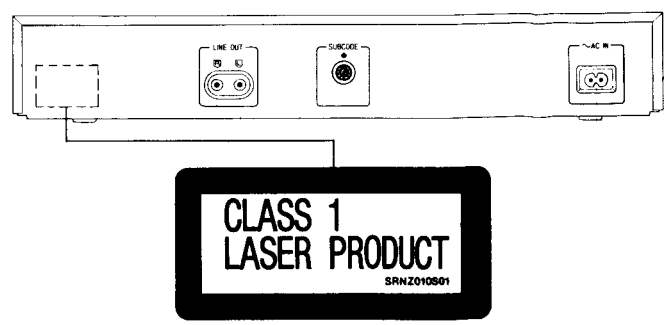
## ■ PRECAUTION OF LASER DIODE

**Caution: This product utilizes a laser diode.**
**ADVARSEL: I dette a apparat anvendes laser.**

### • Use of caution labels

Note: ○ Mark is used, × Mark is not used.

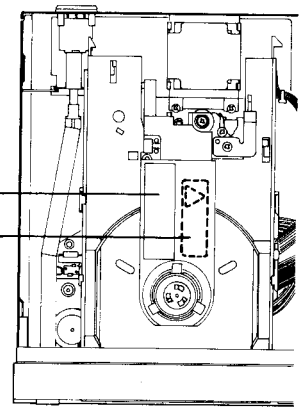
| Areas | Disc clamper | SQWD10 | SQWD11 | SRNZ010S01 | SRNZ010S02 |
|---|---|---|---|---|---|
| [M], [XA], [XM] [EC], [PA], [PE] [PC] | ○ | × | × | × | × |
| [MC] | ○ | ○ | × | × | × |
| [E] | ○ | × | ○ | ○ | ○ |
| [EK], [XL], [EG] [EB], [EH], [EF] [Ei] | ○ | × | × | ○ | ○ |



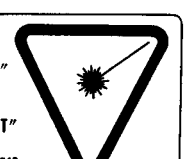

Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.

DANGER-Invisible laser
radiation when open.
AVOID DIRECT EXPOSURE TO BEAM.

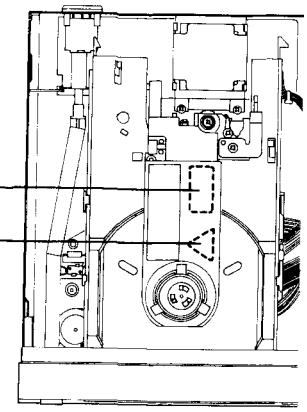
Disc clamper

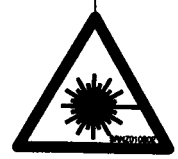


"CAUTION-HAZARDOUS LASER, AND ELECTROMAGNETIC RADIATION WHEN OPEN"
"ATTENTION-RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT"
SQWD10



ADVARSEL - Usynligt laserlys udstråles ved åbning. UNDGÅ DIREKTE BESTRÅLING. SQWD11



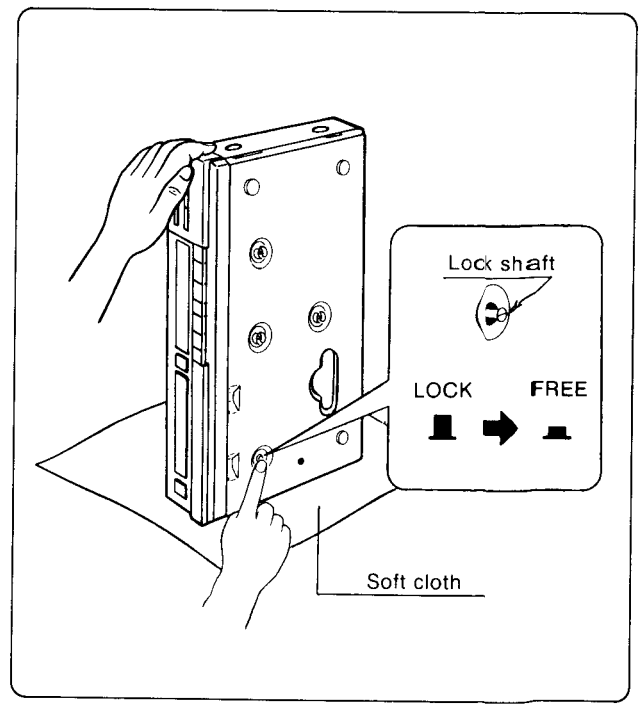


VAROITUS! Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilyä

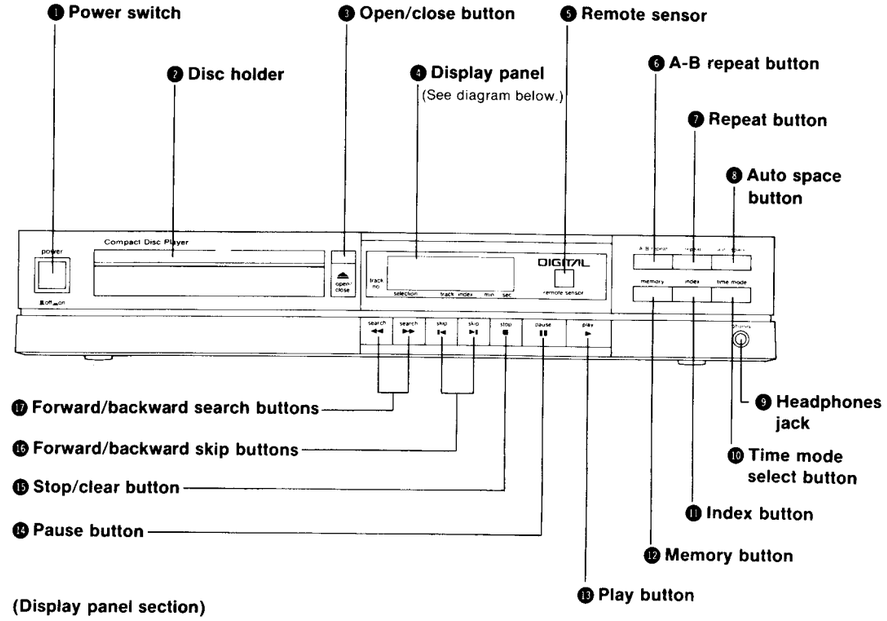
## ■ BEFORE USING THIS UNIT

1. Place a soft cloth under the unit to protect it from scratches.
2. Press the lock shaft on the bottom panel to the in position (🔒→🔓).

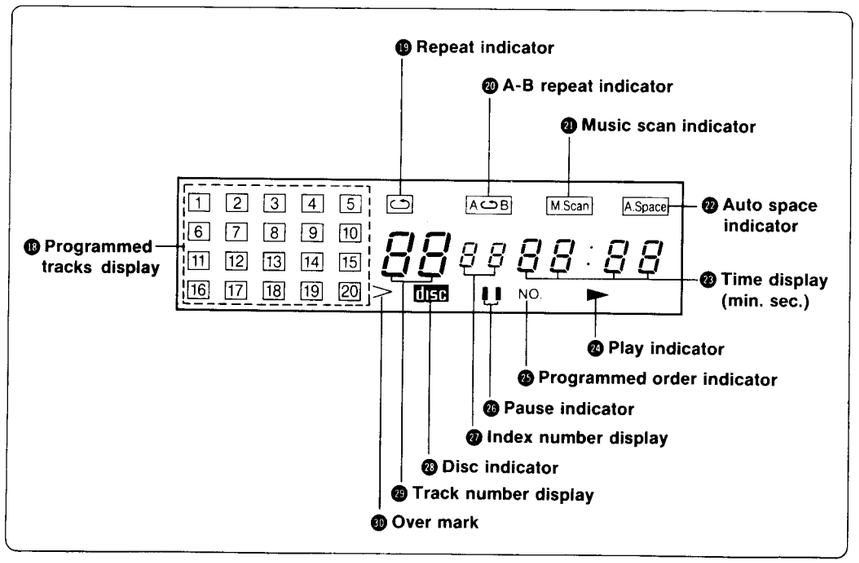
**NOTE:**
**IF THE PLAYER IS TRANSPORTED AGAIN, PERFORM THE FOLLOWING, STEPS:**
1) Remove the disc from the holder.
2) Press the lock shaft to the out position (🔓→🔒).
**CAUTION:**
Do not transport the player without locking the lock shaft. Severe damage will result.



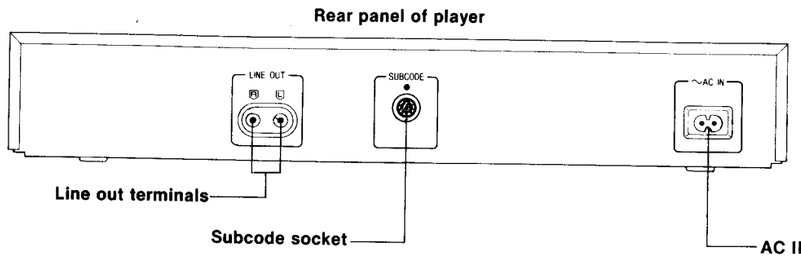
# ■ LOCATION OF CONTROLS




(Display panel section)




Rear panel of player






# ■ FUNCTIONS

### ❶ Power switch
Press ( → ) to switch power on and press again ( → ) to switch power off.

### ❷ Disc holder
The disc is inserted in this holder with the label side up.

### ❸ Open/close button
**Press this button to open and close the disc holder.**

### ❹ Display panel

### ❺ Remote sensor
**Signals from the accessory infrared remote control unit are received here.**

### ❻ A-B repeat button
**Press to repeat a section between two specified points A and B.**

### ❼ Repeat button
**Press this button to activate the repeat mode.**

### ❽ Auto space button
**Press this button to set a silent interval of 3 seconds between the songs on a disc.**
Note that this 3 seconds is in addition to the silent interval between songs on the disc. Therefore, if songs are already separated by, for example, a 3-second silent interval on the disc, pressing the auto space button will cause the interval to become 6 seconds.

### ❾ Headphones jack
When listening to music with stereo headphones, avoid listening for prolonged periods of time to prevent hearing loss.

### ❿ Time mode select button
**Use this button to select the desired time display mode.**

### ⓫ Index button
**Press this button to specify an index number instead of a track number.**

> **Index:**
> In some compact discs, indexes are used to divide tracks into smaller sections for easy access. If a disc includes indexes, a list of the indexes will be contained in the liner note included with that disc.

### ⓬ Memory button
**Press this button to memorize program steps.**

### ⓭ Play button
**Press this button to begin disc play.**

### ⓮ Pause button
**Press this button to briefly stop disc play.**

### ⓯ Stop/clear button
**Press this button to stop disc play or to change the program.**

### ⓰ Forward and backward skip buttons
**Use these buttons to perform the following three operations.**

1. **To start disc play from a specific track or index number (random access play).**
   Press either skip button before starting disc play.
2. **To program track numbers before starting disc play (program play).**
   Press either skip button before starting disc play.
3. **To move to the beginning of a specific track or index (skip play).**
   Press either skip button during disc play or the pause mode.

### ⓱ Forward and backward search buttons
**Use these buttons to move the pickup forward or backward (manual search play function).**

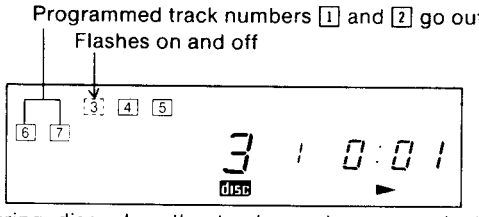
> **Pickup:**
> The pickup is the device that reads the information on the disc surface using a laser. The pickup moves across the disc as the disc is played, but it is not visible from outside of the cabinet.

## ⑱ Programmed tracks display

**The programmed tracks display has the following three display modes.**

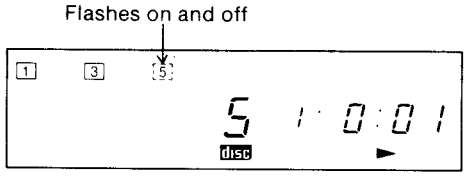
1. **When a disc is loaded, this display shows the total number of tracks and playing time on the disc.**
   For example, the diagram below shows that the disc has 7 tracks and a total playing time of 49 minutes and 58 seconds.

2. **When a track number is specified before the start of disc play, the track number flashes on and off.**
   For example, the diagram below shows that disc play is to begin from track 3.




During disc play, the track number currently being played flashes on and off.

3. **When track numbers are programmed before the start of disc play, the programmed track numbers flash on and off.**
   For example, the diagram below shows that tracks 5, 3 and 1 are to be played. During disc play, the number of the track currently being played flashes on and off.




## ⑲ Repeat indicator (↻)

**Illuminates when the repeat button is pressed to activate the repeat mode and goes out when the repeat mode is cancelled.**

## ⑳ A-B repeat indicator

Illuminates when the A-B repeat mode is activated by pressing the A-B repeat button.

- "A↻" illuminates when the A-B repeat button is pressed once.
- "A↻B" illuminates when the A-B repeat button is pressed again.
- If the A-B repeat button is pressed a third time, this indicator goes out to show that A-B repeat has been cancelled.

## ㉑ Music scan indicator ( M.Scan )

**Illuminates when the remote control music scan button is pressed and goes out when the music scan play is cancelled.**

## ㉒ Auto space indicator ( A.Space )

**Illuminates when the auto space button is pressed to activate the auto space mode and goes out when the button is pressed again to cancel the auto space mode.**

## ㉓ Time display (min. sec.)

**This display shows the time in four modes in minutes and seconds according to the setting of the time mode select button.**

① Total remaining playing time
↓
② Remaining playing time on current track
↓
③ Total elapsed playing time
↓
④ Track number and elapsed playing time from beginning of current track

## ㉔ Play indicator ( ▶ )

**Illuminates when the play button is pressed and goes out when disc play is stopped.**

## ㉕ Programmed order indicator (NO)

**The programmed track numbers and corresponding program step numbers are displayed here one by one (flashing on and off) each time the remote control recall button is pressed.**

## ㉖ Pause indicator ( ▮▮ )

**Illuminates when the pause button is pressed and goes out when the pause mode is cancelled.**

## ㉗ Index number display (index)

**Index numbers up to 99 are shown here.**
On discs having no indexes, this display will always read "1".

## ㉘ Disc indicator ( disc )

**Illuminates when a disc is in the holder (if power is on). This indicator allows you to check in an instant whether or not a disc is loaded.**

## ㉙ Track number display (track)

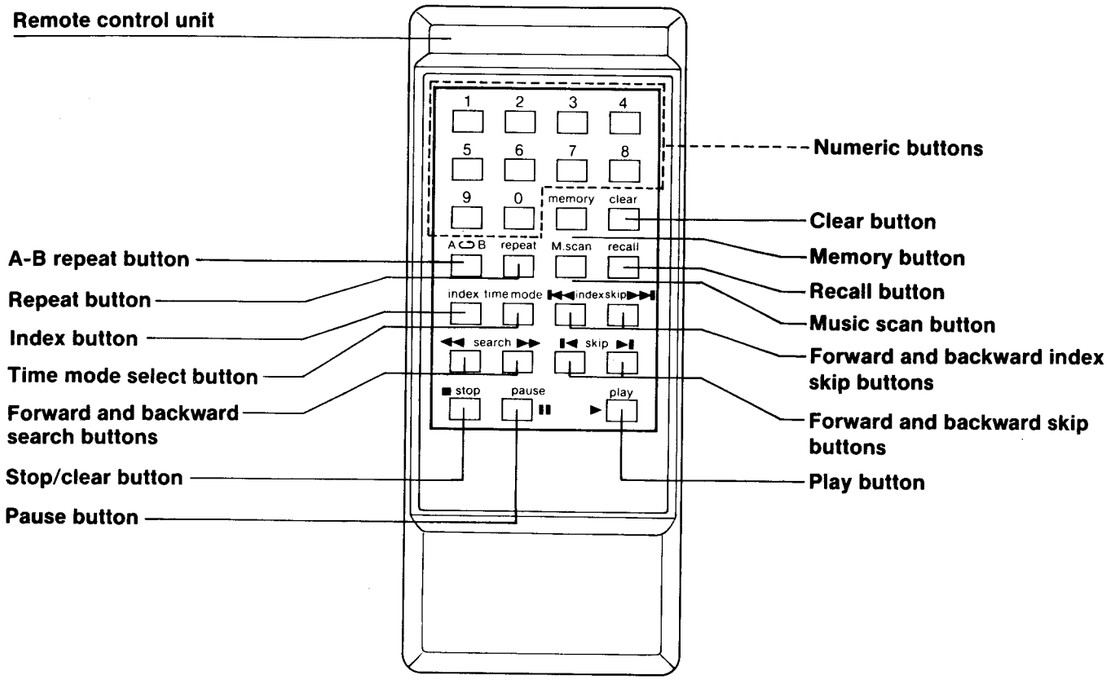
**Track numbers up to 99 are shown here.**
Track numbers are displayed in a loop. Therefore, while the forward or backward skip button is depressed, the displayed track number will continue to change as follows:
(However, this is only possible when the unit is in stop mode or during repeat play.)

- When the forward skip button is pressed
  ↻1→2→3→4→5→6→7↻
- When the backward skip button is pressed
  ↻7→6→5→4→3→2→1↻
- This feature conveniently allows you to select the desired track using the forward and/or backward skip button.

## ㉚ Over mark (>)

**Illuminates when a disc having more than 21 tracks is loaded.**

## ■ REMOTE CONTROL UNIT




**When using the remote control unit, press the buttons slowly and accurately to avoid mistaken operation.**

### Remote control unit facilities

- The remote control unit has the following capabilities not available on the player.

① Numeric buttons for entering track and index numbers.
② Clear button for cancelling program play entries one by one.
③ Recall button for checking the programmed track and index numbers.
④ Index skip buttons for forward and backward index skip.

- The following operations are not possible using the remote control unit.

① Power on/off
② Disc holder open/close
③ Auto space

### ■ Notes

- Always aim the remote control unit at the front panel receiver.
- The remote control unit can be used at an angle range of up to 30° from the direction in which the front panel faces.
- The remote control unit can not be used from a distance of 7 meters (23 ft.).

### ■ Remote control operation

Point the remote control unit at the front panel receiver and press the appropriate button(s). The front panel remote control indicator illuminates as long as each button is held down.



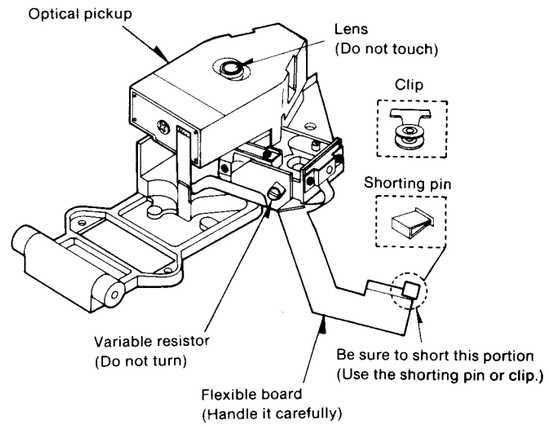


## ■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.

### • Handling of optical pickup

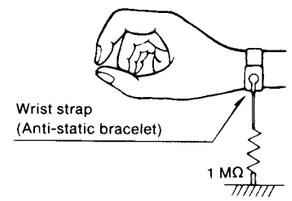
1. Do not give excessive shock to the optical pickup because it is of extremely precise structure.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. When removing or connecting the short pin, finish the job in as short a time as possible.
3. Take care not to apply excessive stress to the flexible board.
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

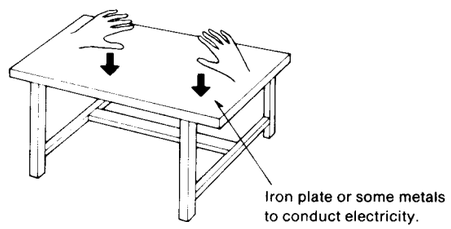



### • Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to relieve the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

**Caution:**
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.



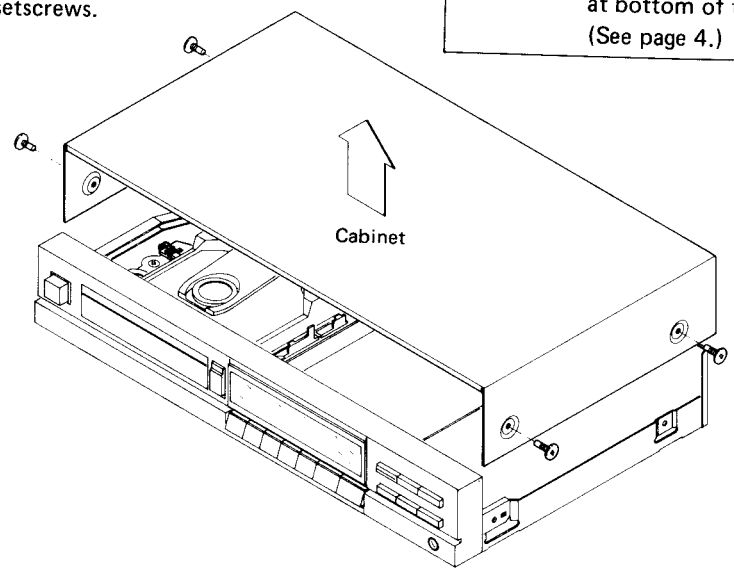



# ■ DISASSEMBLY INSTRUCTIONS

**CAUTION:**
- It is very dangerous to look at or touch laser radiation. (Laser radiation is invisible.)
- With the unit turned "on", laser radiation is emitted from the pickup lens.
- When doing the job, removing the cabinet and disc clamper of this unit, be sure to turn the power supply off.

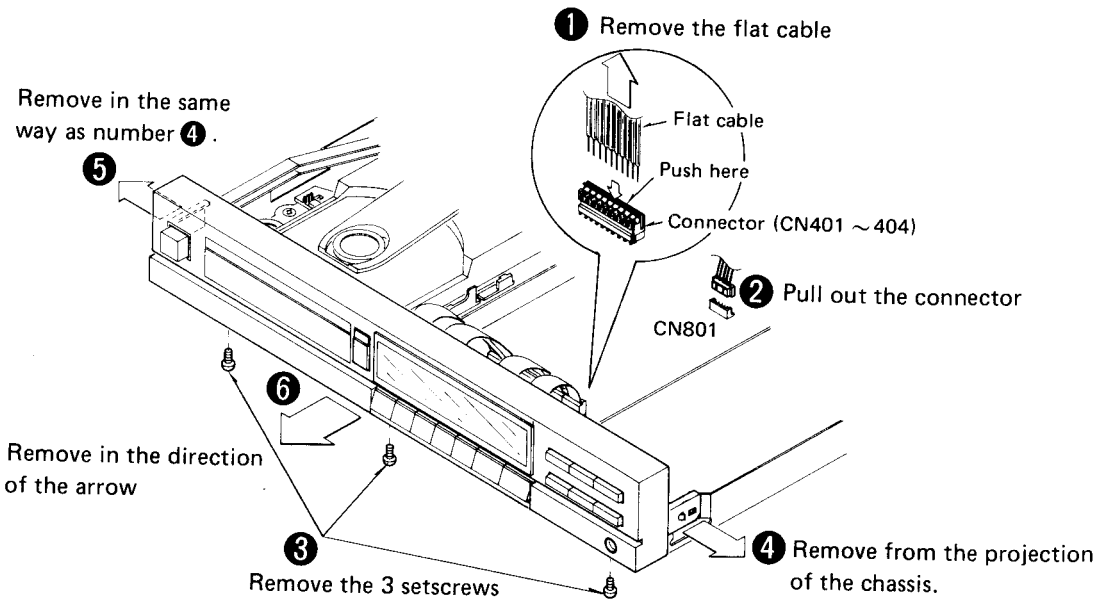
| Ref. No. 1 | How to remove the cabinet |
|---|---|
| Procedure 1 | • Remove the 4 setscrews. |

**Note:** Locking the lock shaft at bottom of the unit. (See page 4.)




| Ref. No. 2 | How to remove the front panel |
|---|---|
| Procedure 1 ➡ 2 | • Remove in the numerical order shown. |

**Note:** **How to remove the flat cable**
Pull out the flat cable while pressing the connector.


❶ Remove the flat cable
Flat cable
Push here
Connector (CN401 ~404)
❷ Pull out the connector
CN801
Remove in the same way as number ❹.
❺
❻
Remove in the direction of the arrow
❸ Remove the 3 setscrews
❹ Remove from the projection of the chassis.

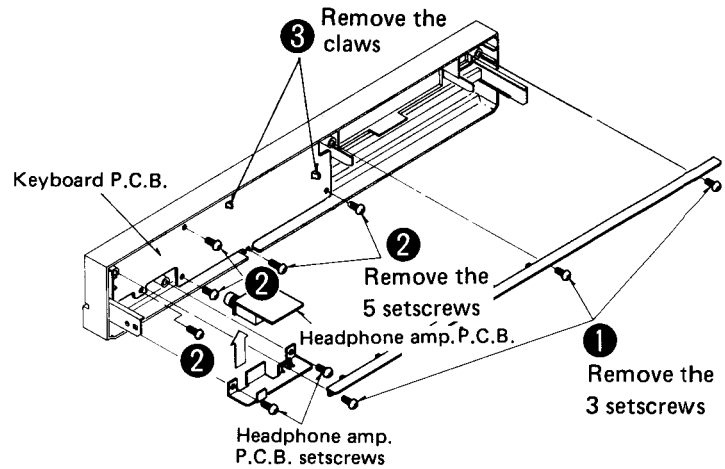
| Ref. No. 3 | How to remove the keyboard P.C.B. |
|---|---|
| Procedure 1➡2➡3 | • Remove in the numerical order shown. |

### How to remove the headphone amp. P.C.B.

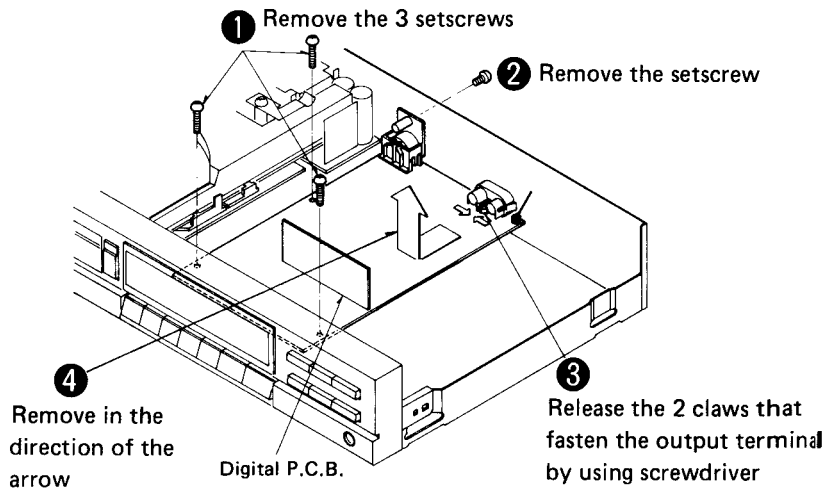
- Remove the 2 setscrews.

### How to remove the operation buttons.

- Remove the keyboard P.C.B. and remove the operation button from the front panel.

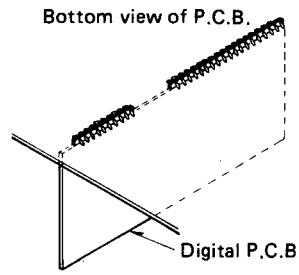



| Ref. No. 4 | How to remove the main P.C.B. |
|---|---|
| Procedure 1 ➡ 4 | • Remove in the numerical order shown. |


1 Remove the 3 setscrews
2 Remove the setscrew
4 Remove in the direction of the arrow
Digital P.C.B.
3 Release the 2 claws that fasten the output terminal by using screwdriver

### How to remove the digital P.C.B.

1. Remove the main P.C.B. and turn it over.
2. Remove the solder of the digital P.C.B. by using a solder sucker.



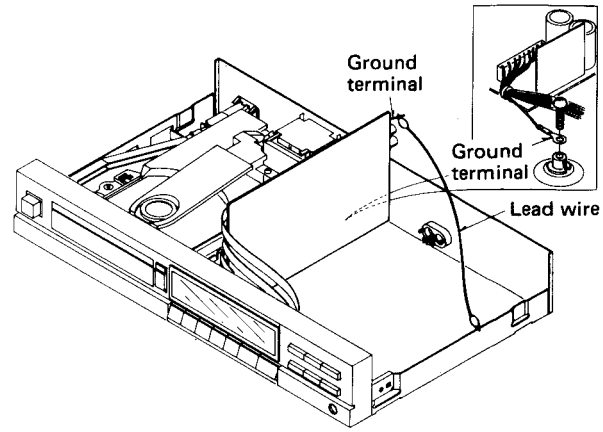
## How to check the main P.C.B.

- When checking the soldered surfaces of the main P.C.B. and replacing the parts, do as shown.

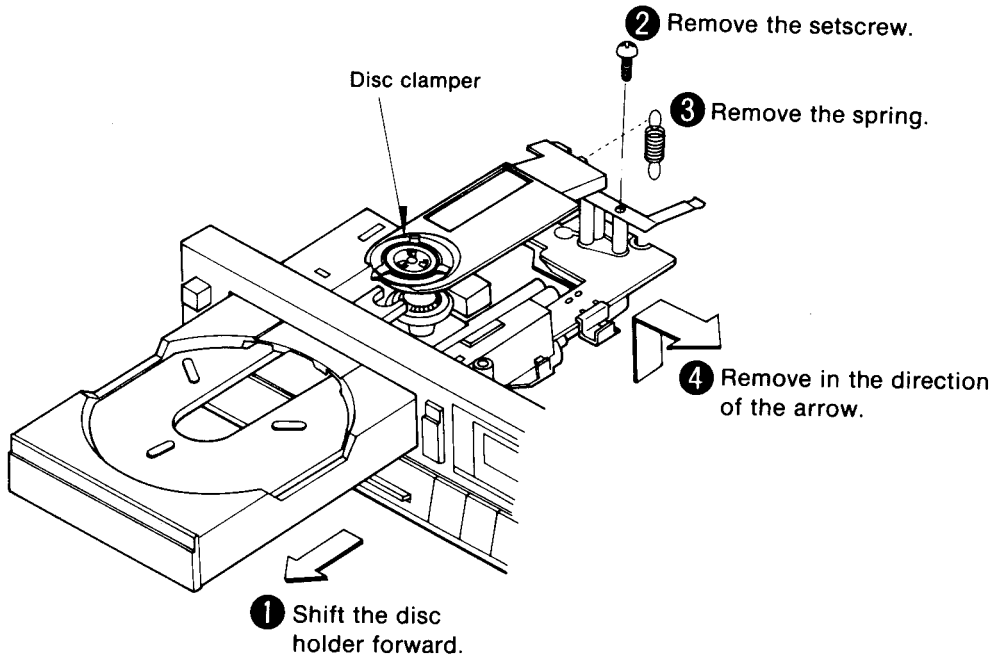
**Cautions:**

1. Be sure to connect the P.C.B. ground terminal (spring) and chassis lead wire.
2. Connect the power supply P.C.B. ground terminal to the chassis.
   (Do the job as shown by using the P.C.B. setscrew.)

**Caution:**
Connect the ground terminal of power supply P.C.B. to the chassis.

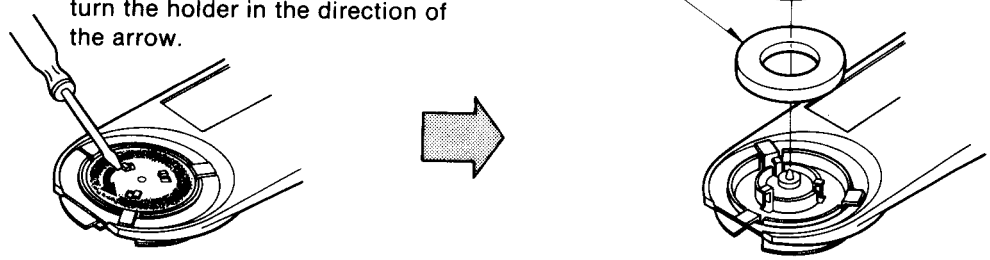



| Ref. No. 5 | How to remove the disc clamper |
|---|---|
| Procedure 1 ➡ 5 | • Remove in the numerical order shown. |


❷ Remove the setscrew.
Disc clamper
❸ Remove the spring.
❹ Remove in the direction of the arrow.
❶ Shift the disc holder forward.

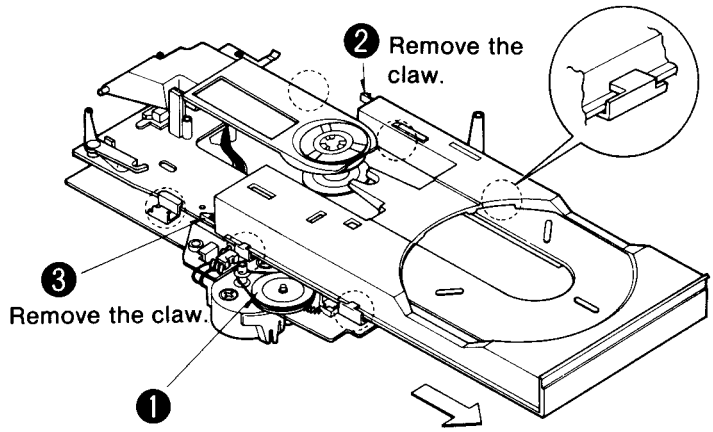
## How to remove the magnet

- Insert a screwdriver between the magnet holder and clamper, then turn the holder in the direction of the arrow.

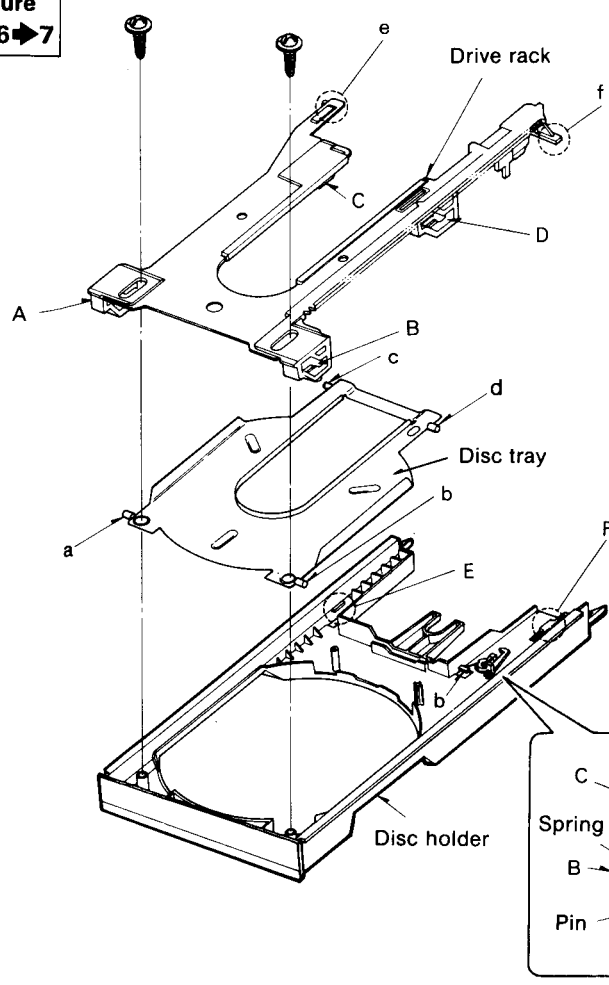


| Ref. No. 6 | How to remove the disc holder |
|---|---|
| Procedure 1➡2➡6 | • Remove in the numerical order shown. |

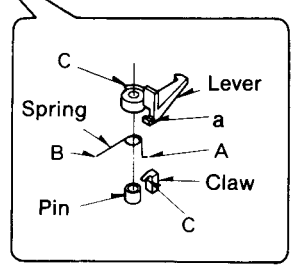
**Caution for fitting**
The disc holder should be fitted in the groove of loading base of 6 portions.


❷ Remove the claw.
❸ Remove the claw.
❶ Turn the loading motor pulley clockwise to shift the disc holder forward.
❹ Pull out the disc holder.

| Ref. No. 7 | How to remove the disc tray and drive rack |
|---|---|
| Procedure 1➡2➡6➡7 | • Remove the 2 setscrews. |



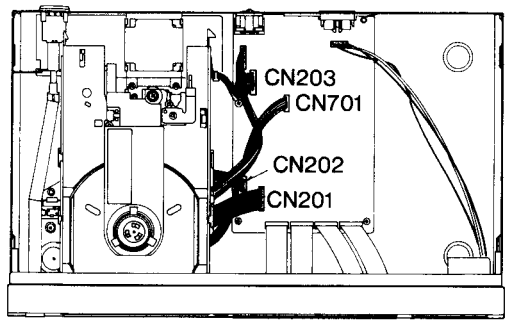

**Caution for fitting**
- The a ~ d of the disc tray should be set in grooves A ~ D of the drive rack.
- The e and f of the drive rack should be set in E and F of the disc holder.




**Fitting of swing lever and spring**
- Insert the spring into the pin, and fit the swing lever, matching part C of the swing lever with claw C.
- Match spring A to a and B to b.

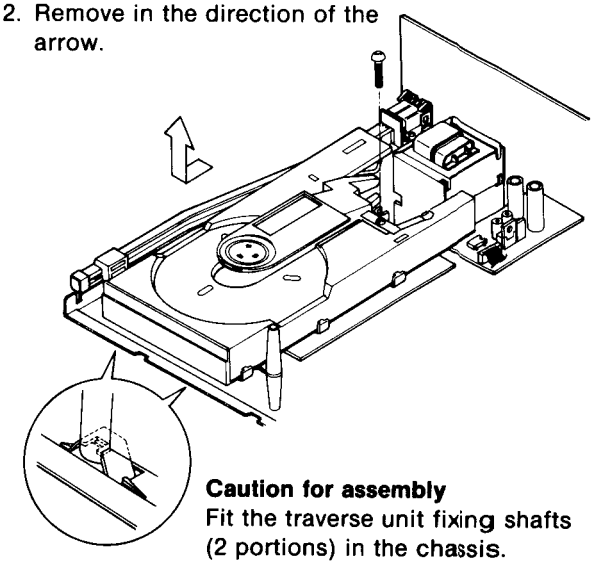
| Ref. No. 8 | How to remove the traverse unit ass'y (optical deck unit) |
|---|---|
| Procedure 1➡2➡8 | • Remove the 4 connectors (CN201 ~ CN203, CN701). |

**Note:** Locking the lock shaft at the bottom of the unit. (See page 4.)




Remove the front panel.

1. Remove the setscrew.
2. Remove in the direction of the arrow.

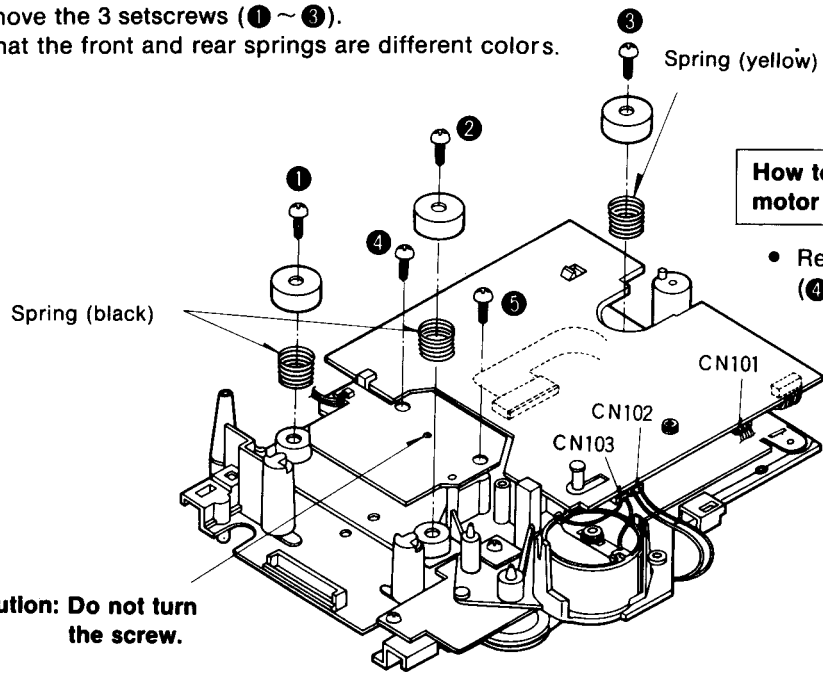


**Caution for assembly**
Fit the traverse unit fixing shafts (2 portions) in the chassis.

## How to separate the traverse unit and disc holder

1. Turn over the traverse unit ass'y.
2. Pull out the 3 connectors (CN101 ~ CN103).
3. Remove the 3 setscrews (❶ ~ ❸).

Note that the front and rear springs are different colors.




**Caution: Do not turn the screw.**

## How to remove the spindle motor drive P.C.B.

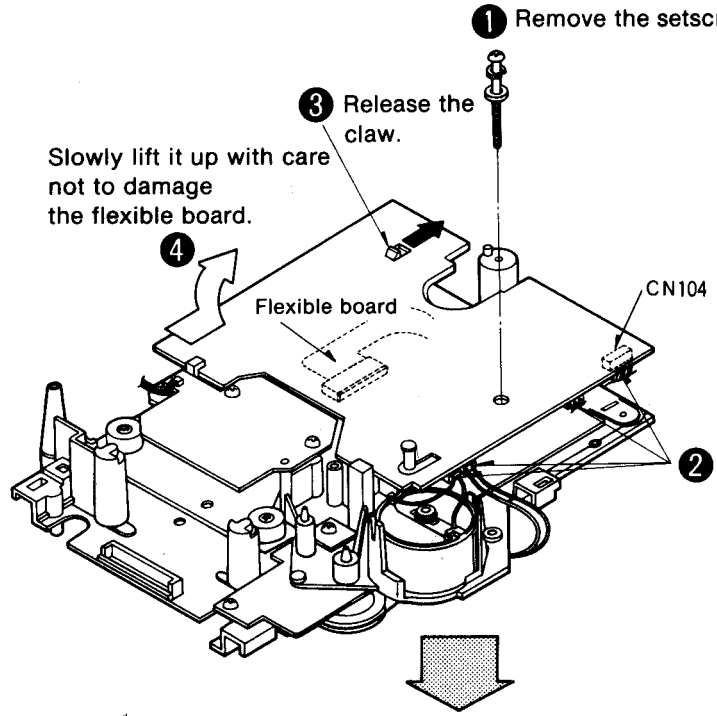
• Remove the 2 setscrews (❹, ❺).

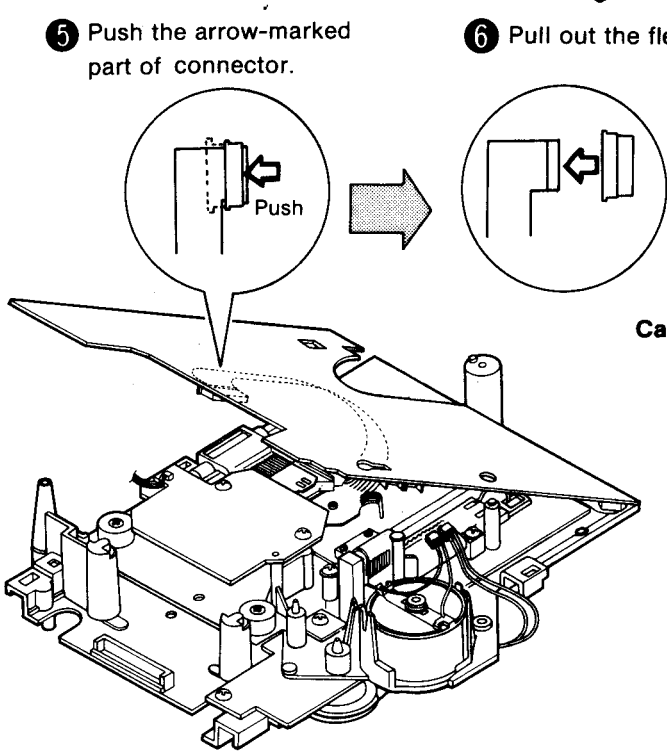
| Ref. No. 9 | How to remove the optical servo P.C.B. |
|---|---|
| Procedure 8 ➡ 9 | |

**Refer to the optical pickup handling precautions (see page 9).**

- Turn over the traverse unit ass'y and remove in the numerical order shown.

**Cautons:**
- When repairing with the optical servo P.C.B. opened, take special care not to cut off the flexible board of the optical pickup.
- When the flexible board is removed, insert the short pin into the board.


1 Remove the setscrew.
3 Release the claw.
Slowly lift it up with care not to damage the flexible board.
4
Flexible board
CN104
2 Pull out the 4 connectors (CN101 ~ CN104).

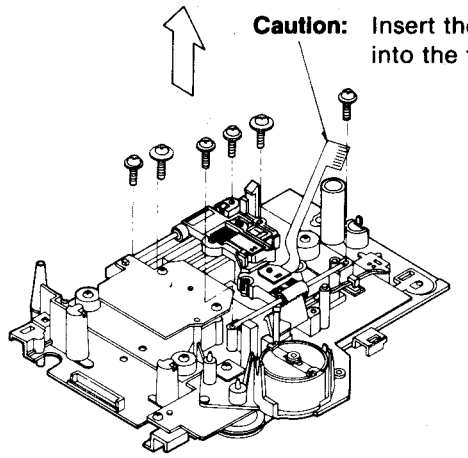


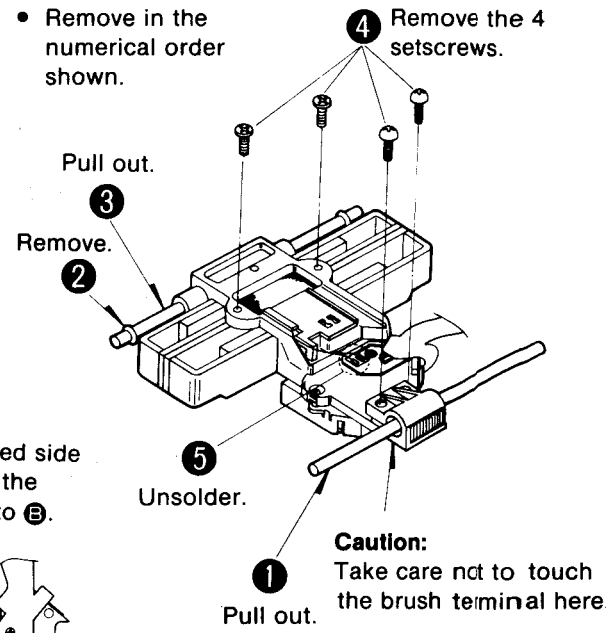

**Caution:** Insert the short pin into the flexible board in order to prevent breakdown of laser diode.

**Refer to the optical pickup handling precautions (see page 9).**

| Ref. No. 10 | How to remove the optical pickup |
|---|---|
| Procedure 8 ➡ 9 ➡ 10 | • Remove the 6 setscrews. |

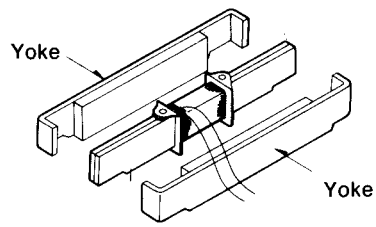
**Refer to the optical pickup handling precautions (see page 9).**



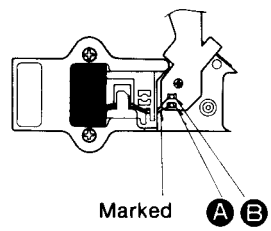

## How to remove the drive coil

1. Remove the 2 yokes.
2. Pull out the drive coil.



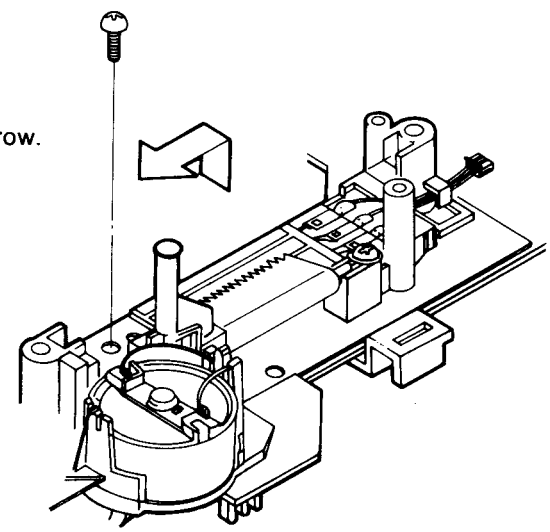

* DC resistance drive coil 36Ω±1.5Ω.

• **Drive coil fitting**
Solder the marked side of coil to Ⓐ and the unmarked side to Ⓑ.

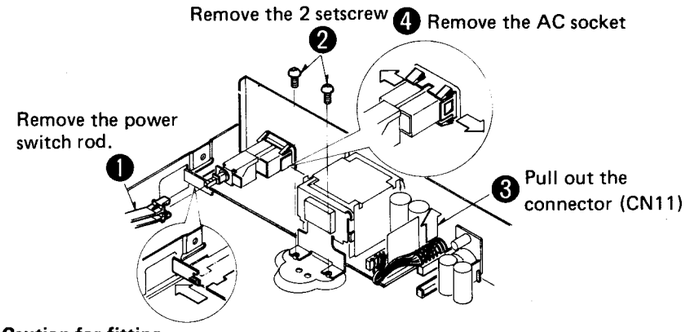



| Ref. No. 11 | How to remove the resistance unit (Optical pickup speed detection) |
|---|---|
| Procedure 10 ➡ 11 | |

1. Remove the setscrew.
2. Remove in the direction of the arrow.



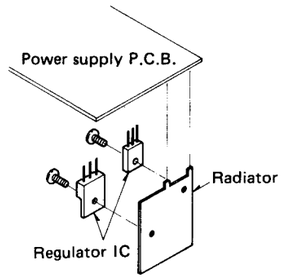
| Ref. No. 12 | How to remove the power supply P.C.B. |
|---|---|
| Procedure 8 ➡ 12 | • Remove in the numerical order shown. |



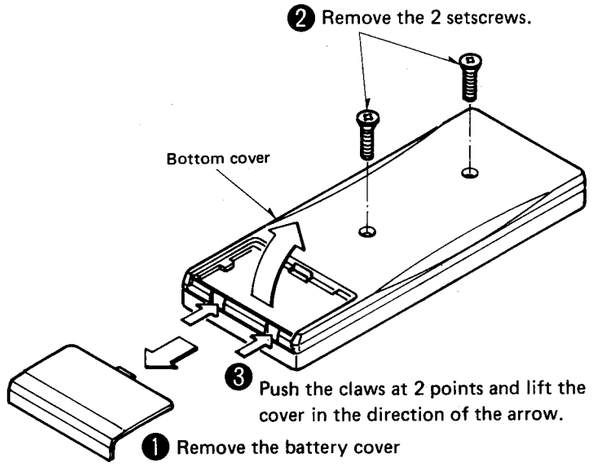

**Caution for fitting**
Fit the P.C.B. in the groove of chassis.

**How to remove the regulator IC**

1. Turn over the power supply P.C.B.
2. Unsolder the IC and radiator and remove the 2 setscrew.

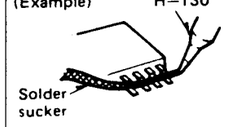
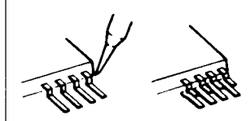
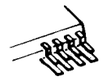



| Ref. No. 13 | How to remove the bottom cover of remote control unit |
|---|---|
| Procedure 13 | • Remove in the numerical order shown. |


2 Remove the 2 setscrews.
Bottom cover
3 Push the claws at 2 points and lift the cover in the direction of the arrow.
1 Remove the battery cover



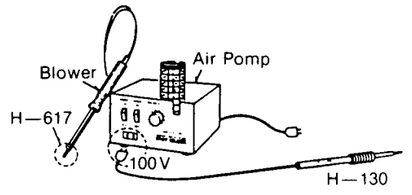
## ■ HOW TO REPLACE IC'S (Small outline type)

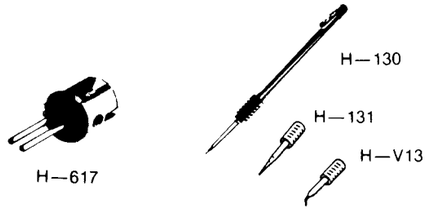
| | Replacing procedure | | Cautions |
|---|---|---|---|
| 1 | Reduce the amount of solder on each pin of the integrated circuit by use of a solder sucker. | (Example) H—130   | • **Recommended tool** .....Special soldering iron *H605M and H—130. *H605E and H—130.<br>• Do not touch the soldering iron to the area for a long time. It may otherwise cause removal of the print foil.<br>• When shifting the pin upward, do the job quickly while the solder is melting. If the solder is hard, it may cause removal or breakage of the print foil.<br>• When using a pencil type soldering iron.<br>1. Completely remove the solder from each IC pin by use of solder sucker.<br>2. Raise each pin by means of an eyelèteer, hold the pliers then remove IC package from P.C.B. |
| 2 | Melt the solder on the pin (one electrode) with the soldering iron. | | |
| 3 | While the solder is melting, shift the pin upward by the soldering iron to remove it from the foil. |  | |
| 4 | Remove each pin from the foil according to the above-mentioned procedure. |  | |

*** Special soldering iron**
**(Refer to Technical Information, ORDER NO. GAD84125486T1)...For U.S.A. and Canada**
**(Refer to Technical Information, ORDER NO. GAD84115476T8)...For others**

- **H—605 Spot Heater (hot-air solder iron)**
  This device that uses hot air to melt solder was developed to remove Flat-Pakage ICs, RHCs and chip parts.

- H—605M (For 120V power source)
- H—605E (For 200V/220V/240V power source)




- **H—617 Twin Nozzle (for spot heater)**
  Special nozzle for the removal of RHCs and chip resistors.
  (Nozzle diameter : 1.0 mm x 2)

- **H—130 Slim Pencil Solder Iron**
  An ultrasmall ceramic heater solder iron is extremely handy for soldering chip parts, RHCs, ICs, etc., to high-density circuit boards.
  Features:
  - Rated power: 100V, 15W
  - Max. temp.: 400°C
  - Heater: ceramic (long life)
  - Insulation resistance: 100MΩ
  - Length: 178 mm
  - Weight: 16 g (not including cord)

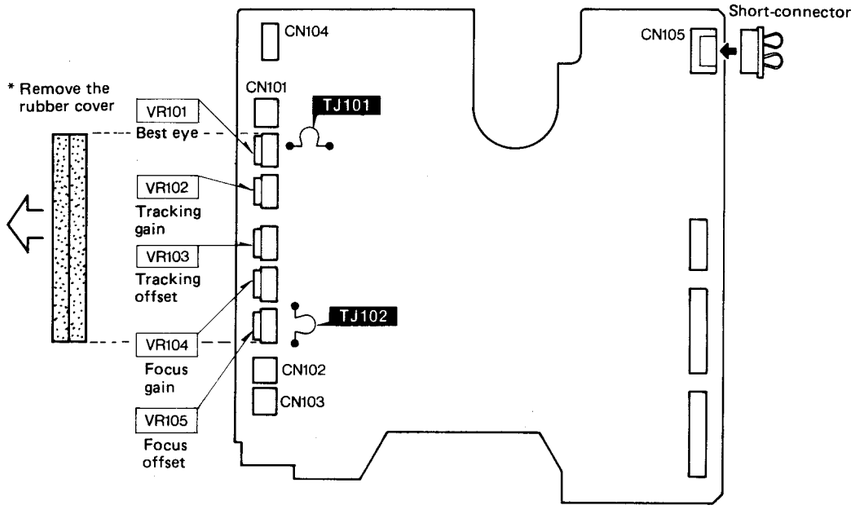
- **H—131, H—V13 Cap Bits**
  Solder tip for the slim pencil Solder Iron and is composed of a bit holder and a corrosion resistance solder tip.
  Permits changing of solder tips even while still hot.
  - Solder tip: 0.3 mm

# ■ MEASUREMENTS AND ADJUSTMENTS

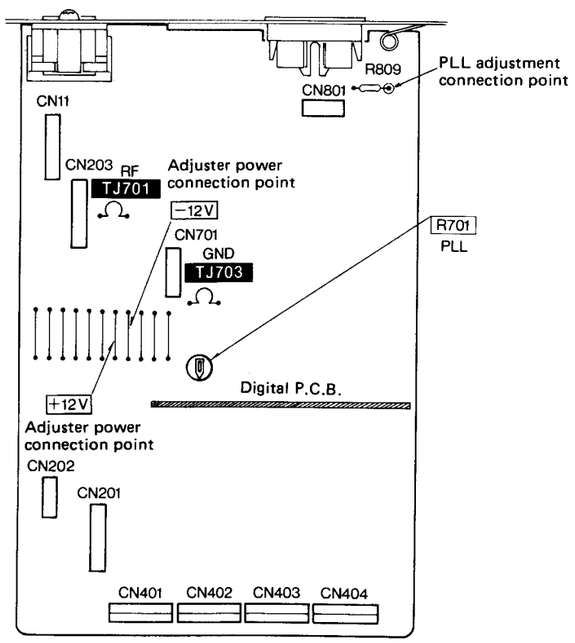
**Caution:**
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "**on**", laser radiation is emitted from the pick-up lens. Be careful during adjustments in particular.
- The adjustment of this unit is basically the same as for SL-PJ11. (The adjusting points are partially different.) For the detail, refer to SL-PJ11 Service Manual (Order No. HAD8509261G0).

## ADJUSTMENT POINTS

- **Servo P.C.B.**




- **Main P.C.B.**






## ELECTRICAL ADJUSTMENT

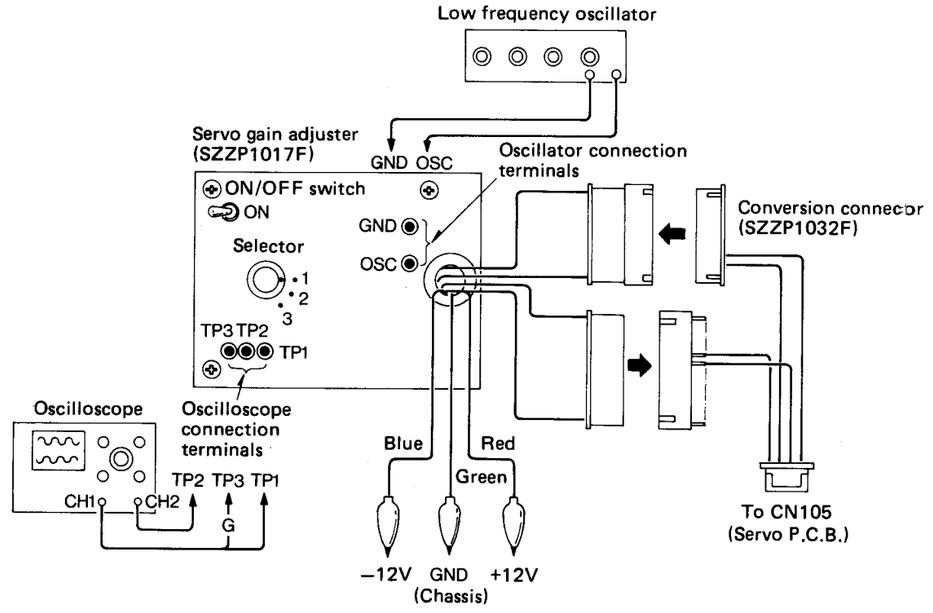
### Equipment used

- Servo gain adjuster (SZZP1017F)
- Conversion connector (SZZP1032F)
- Two-channel oscilloscope (with trigger) of 30 MHz or over.
- Low frequency oscillator
- Test disc (SZZP1014F)
- Ordinary disc

### Adjustment Procedure

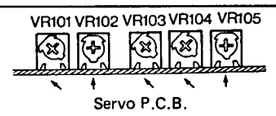

**Step 1:** Remove the cabinet. . . . . Page 10
**Step 2:** Connect the servo gain adjuster. . . . . Page 20
**Step 3:** Temporary setting of each VR. . . . . Page 21
**Step 4:** Focus gain adjustment . . . . . Page 21
**Step 5:** Tracking gain adjustment. . . . . Page 21
**Step 6:** Best eye (PD balance) adjustment . . . . . Page 21
**Step 7:** Focus offset adjustment . . . . . Page 22
**Step 8:** Tracking offset adjustment . . . . . Page 22
**Step 9:** PLL adjustment . . . . . Page 22
**Step 10:** Check of operation after adjustment . . . . . Page 23


### Servo Gain Adjuster and Its Connection



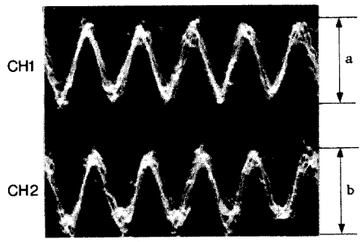
## TEMPORARY SETTING OF EACH VR

1. Remove the rubber cover.
2. Temporarily set each VR of servo P.C.B. as shown.




## FOCUS GAIN ADJUSTMENT

1. Adjust the low frequency oscillator to **750 Hz** frequency and **150 mVp-p** output voltage, and connect it to **OSC** and **GND** of servo gain adjuster.
2. Connect CH1 and CH2 of the oscilloscope to **TP1** and **TP2** of the servo gain adjuster. **(TP3 grounded)**
   **Oscilloscope setting:** VOLT . . . . . .100 mV (both channels)
   SWEEP . . . . . .2 msec.
   INPUT . . . . . .AC
3. Set the servo gain adjuster switch to "**3**". (Set the controller ON · OFF switch to "**on**".)
4. Turn **on** the power switch and mount the test disc.
5. With the mode set to "play" 750 Hz signal appears on the oscilloscope. Then adjust **VR104** so that the waveform amplitudes on both channels are equal to each other.



Make a = b

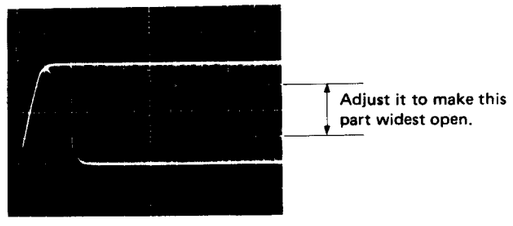
## TRACKING GAIN ADJUSTMENT

1. Adjust the low frequency oscillator to **1.2 kHz** frequency and **150 mVp-p** output voltage.
2. Change the oscilloscope setting, making the oscilloscope connection the same as mentioned above.
   **Oscilloscope setting:** VOLT . . . . . .100 mV (both channels)
   SWEEP . . . . . .0.5 msec.
   INPUT . . . . . .DC
3. Set the servo gain adjuster switch to "**1**".
4. With the mode set to "play", 1.2 kHz signal appears on the oscilloscope. Then adjust **VR102** so that the waveform amplitudes on both channels are equal to each other.
5. The servo gain adjuster is not necessary for other adjustments. So, disconnect the adjuster, **and insert the short connector of CN105 to the original position.**

Make a = b

## BEST EYE (PD BALANCE) ADJUSTMENT

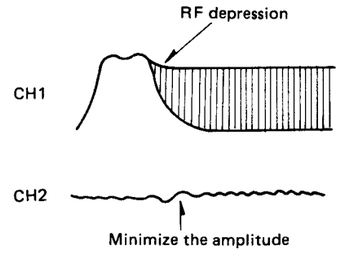
1. Connect CH1 of the oscilloscope to **TJ701** (+) and **TJ703** (–) of the main P.C.B.
   **Oscilloscope setting:** VOLT . . . . . .200 mV
   SWEEP . . . . . .0.5 μsec.
   INPUT . . . . . .AC
2. Turn on the power supply and play the **bnad 13** (0.5 mm black spot) of the test disc.
3. Adjust **VR101** so that the eye pattern of RF signal is widest open.





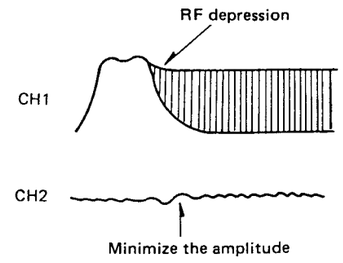

## FOCUS OFFSET ADJUSTMENT

1. Connect CH1 of the oscilloscope to **TJ701** (+) and **TJ703** (–) to the main P.C.B. Connect CH2 to **TJ102** of servo P.C.B.
   **Oscilloscope setting:** VOLT . . . . . .500 mV (CH1)
   100 mV (CH2)
   SWEEP . . . . . .0.5 μsec.
   INPUT . . . . . .AC (CH1)
   DC (CH2)
   MODE. . . . . .NORM (Trigger on CH1)
2. Play the **band 13** (0.5 mm black spot) of test disc.
3. Trigger so that the waveform as shown appears on the oscilloscope, and adjust **VR105** to minimize the RF deression on CH1 and the wave amplitude on CH2.



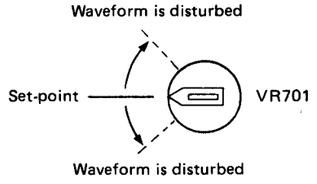

## TRACKING OFFSET ADJUSTMENT

1. Connect CH1 of the oscilloscope to **TJ701** (+) and **TJ703** (–) to the main P.C.B. Connect CH2 to **TJ101** of servo P.C.B.
   **Oscilloscope setting:** VOLT . . . . . .500 mV (CH1)
   100 mV (CH2)
   SWEEP . . . . . .0.5 μsec.
   INPUT . . . . . .AC (CH1)
   DC (CH2)
   MODE. . . . . .NORM (Trigger on CH1)
2. Play the **band 13** (0.5 mm black spot) of test disc.
3. Trigger so that the waveform as shown appears on the oscilloscope, and adjust **VR103** to minimize the RF deression on CH1 and the wave amplitude on CH2.

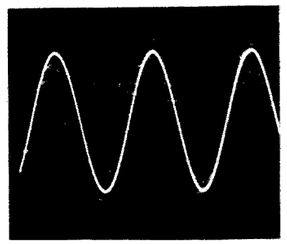



## PLL ADJUSTMENT

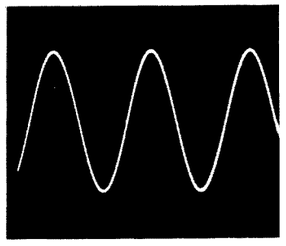
1. Connect CH1 of the oscilloscope to **R809** (+) and chassis (–) of the main P.C.B.
   **Oscilloscope setting:** VOLT . . . . . .1V
   SWEEP . . . . . .1 msec
   INPUT . . . . . .DC
2. Play the **band 13** (0.5 mm black spot) of the test disc.
3. Adjust **VR701** while observing the oscilloscope and set it in the middle of the range where the waveform is stable.




• **NG**



• **OK**



## CHECK OF PLAY OPERATION AFTER ADJUSTMENT

- **Skip search check**

1. Play a common disc.
2. Push the skip button to check the skip search. (Both in forward and reverse modes).

- **Manual search check**

1. Play a common disc.
2. Push the manual search button to check that manual search can be smoothly made at low and high speeds. (Both in forward and reverse modes).

- **Check for defect**

1. Play the band 13 of the test disc to check that there is no sound skip or noise. (Black spot)
2. Play the band 14 of the test disc to check that there is no sound skip or noise. (Fingerprint)

## OPTICAL PICKUP ADJUSTMENT

### Equipment used

- Two-channel oscilloscope (with trigger) of 30 MHz or over.
- Test disc (SZZP1014F)
- Hexagonal wrench (SZZP1044C)

### Adjustment Procedure

* If the optical pickup is replaced, adjust it according to the following procedure.

**Step 1:** Assemble the set to make it ready for power supply. ..... Page 23

▼

**Step 2:** Temporary setting of each VR. ..... Page 24

▼

**Step 3:** Turntable height adjustment. ..... Page 24

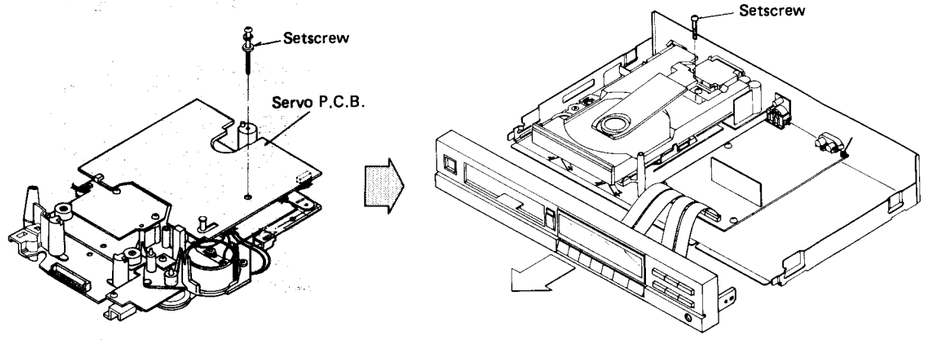
**Step 4:** Mechanical adjustment ..... Page 24

▼

**Step 5:** Electrical adjustment ..... Page 20

### State of Setting

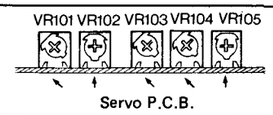
1. Before assembling the set, remove the setscrew of servo P.C.B.
2. Remove the loading base setscrew.
3. Pull out the front panel.





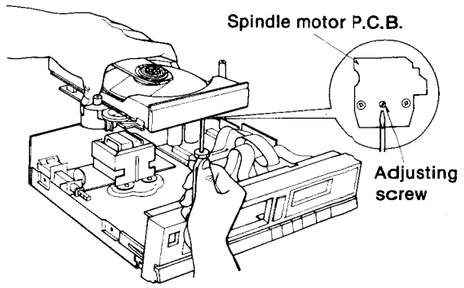

## TEMPORARY SETTING OF EACH VR

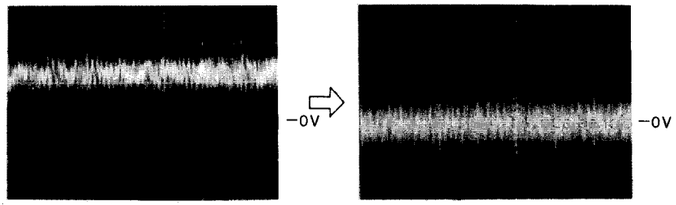
1. Remove the rubber cover.
2. Temporarily set each VR of the servo P.C.B. shown.




## TURNTABLE HEIGHT ADJUSTMENT

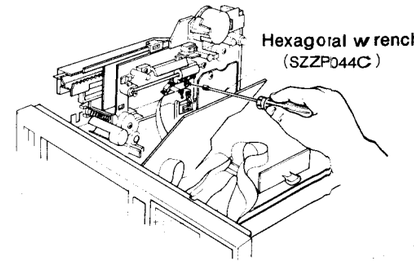
1. Connect the oscilloscope to **TJ101** (+) and chassis (–) of servo P.C.B.
   **Oscilloscope setting:** VOLT . . . . . 100 mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution:** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution:** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

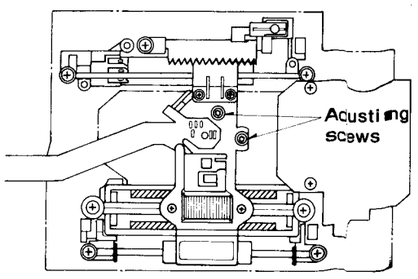


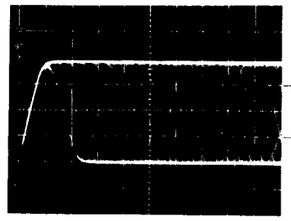




## MECHANICAL ADJUSTMENT

1. Connect the oscilloscope to **TJ701** (+) and **TJ703** (–) of the main P.C.B.
   **Oscilloscope setting:** VOLT . . . . . 0.5V
   SWEEP . . . . . 0.5 μsec.
   INPUT . . . . . AC
2. Turn on the power switch and mount the test disc.
3. Play the test disc.
4. Set the unit as shown with care not to give vibrations to the loading unit.
5. Pull out the connectors (CN101 ~ 103) of the servo P.C.B.
6. Alternately turn the optical pickup adjusting screws (2 pcs) with hexagonal wrench (SZZP1044C) so that the eye pattern of the waveform (RF signal) of the oscilloscope is widest open.
   **Cautions:**
   1. Take care not to damage the flexible board of optical pickup during adjustment.
   2. Before installing the servo P.C.B., make sure that the condenser on the board is laid down.






## ELECTRICAL ADJUSTMENT

1. Fit the loading unit to the chassis.
2. Follow the procedure of "**Electrical adjustment**" mentioned earlier.

## ■ TEST DISC (SZZP1014F) CONTENTS

| TNO. | PURPOSE | SIGNAL | Time |
|---|---|---|---|
| | | (TOC) | |
| 1 | Servo adjustment | Wowble Tone –10 dB L + R | 2'00" |
| 2 | Pickup assenmety adjustment | Wawble Tone –10 dB L + R | 5'00" |
| 3 | Reference | 1 kHz 0 dB L + R | 1'00" |
| 4 | Freq. Response | 20 kHz 0 dB L + R | 0'30" |
| 5 | Emphasis | 16 kHz –0.96 L + R | 0'30" |
| 6 | Channel Separation | L 1 kHz 0 dB R – ∞ | 0'30" |
| 7 | Channel Separation | R 1 kHz 0 dB L – ∞ | 0'30" |
| 8 | Dynamic range | 1 kHz –60 dB L + R | 1'00" |
| 9 | Linearity | 1 kHz –80 dB L + R | 1'00" |
| 10 | S/N | – ∞ | 2'00" |
| 11 | THD | 1 kHz 0 dB L + R | 1'00" |
| 12 | Black Spot | Wowble Tone –10 dB L + R | 5'00" |
| 13 | Black Spot | Wowble Tone –10 dB L + R | 5'00" |
| 14 | Finger Print | Wowbel Tone –10 dB L + R | 5'00" |
| 15 | Finger Print | Wowble Tone –10 dB L + R | 9'00" |
| 16 | Wedge | Wowble Tone –10 dB L + R | 4'00" |
| 17 | Wedge | Wowble Tone –10 dB L + R | 4'00" |
| 18 | Reference | 1 kHz 0 dB L + R | 0'30" |

| TNO. | PURPOSE | SIGNAL | Time |
|---|---|---|---|
| 19 | Freq. Response | 15 Hz | 0'30" |
| 20 | Freq. Response | 20 | 0'30" |
| 21 | Freq. Response | 50 | 0'30" |
| 22 | Freq. Response | 100 | 0'30" |
| 23 | Freq. Response | 200 | 0'30" |
| 24 | Freq. Response | 500 | 0'30" |
| 25 | Freq. Response | 2K | 0'30" |
| 26 | Freq. Response | 5K | 0'30" |
| 27 | Freq. Response | 10K | 0'30" |
| 28 | Freq. Response | 12K | 0'30" |
| 29 | Freq. Response | 15K | 0'30" |
| 30 | Freq. Response | 18K | 0'30" |
| 31 | Freq. Response | 20K | 0'30" |
| 32 | Channel Separation | L 100 Hz 0 dB R – ∞ | 0'30" |
| 33 | Channel Separation | R 100 Hz 0 dB L – ∞ | 0'30" |
| 34 | Channel Separation | L 10 kHz 0 dB R – ∞ | 0'30" |
| 35 | Channel Separation | R 10 kHz 0 dB L – ∞ | 0'30" |
| 36 | Channel Separation | L 20 kHz 0 dB L – ∞ | 0'30" |
| 37 | Channel Separation | R 20 kHz 0 dB L – ∞ | 0'30" |



## ■ TROUBLESHOOTING

**Notes:**

1. Carefully handle the compact disc because stain, dust or warping may cause generation of noise.
2. For the voltage value and waveform, refer to the schematic diagram. (The voltage value and waveform slightly varies depending on the measuring set and tester.)
3. Possible defects are mainly shown by the name of semi-conductor. The adjacent electronic circuits (such as C and R) are omitted.

### • Check the power supply circuit

**Check the 12V power supply**
(positive and negative voltage)
IC103, 104, 201,
801~804, 851
Focus·tracking Error amp.
Coil drive and Traverse servo

Check the voltage of D1 terminals ⊕, ⊖.
NO → AC cord, S1, D1, T1 } defective
YES

Check the voltage of IC1, 2 terminals ⓞ.
NO → IC1, IC2 } defective
YES

**Check the FL power supply.**
**(FL illuminate)**

Check the voltage of BTI terminal ①, ②.
NO → T1 defective
YES

Check the collector voltage of Q13.
NO → Q13, D3, 13 } defective
YES

**Check the 11.4V power supply**
(positive and negative voltage)
Q102~Q109
Focus and tracking coil drive,
Traverse coil drive, Loading
motor drive

Check the voltage of D2 terminals ⊕, ⊖.
NO → D2, T1 } defective
YES

Check the voltage of IC4, 5 terminals.
NO → IC4, IC5 } defective
YES

**Check the 7.8V power supply**
(positive and negative voltage)
IC501
Spindle motor drive

Check the emitter voltages of Q11, 12
NO → Q11, 12, D11, 12 } defective
Ⓐ

Ⓐ
YES

**Check the 5V power supply**
(positive and negative voltage)
IC101, Q101
Focus servo, tracking servo
and Laser power control

Check the emitter voltages of Q110, 111
NO → Q110, 111, D101, 102 } defective
YES

**Check the 5V power supply**
(positive and negative voltage)
IC202, 301~304, 401, 402,
601, 602, Q601~603, 801
Digital circuit, Data slice,
PLL, System control, FL
drive, Muting relay drive

Check the voltage of IC11, 12 terminals ⓞ.
NO → IC11, IC12 } defective

### • Check the focus servo

Check the power supply circuit.
YES

Reset signal level is "H"? (IC402 ③)
NO → IC402 defective
YES

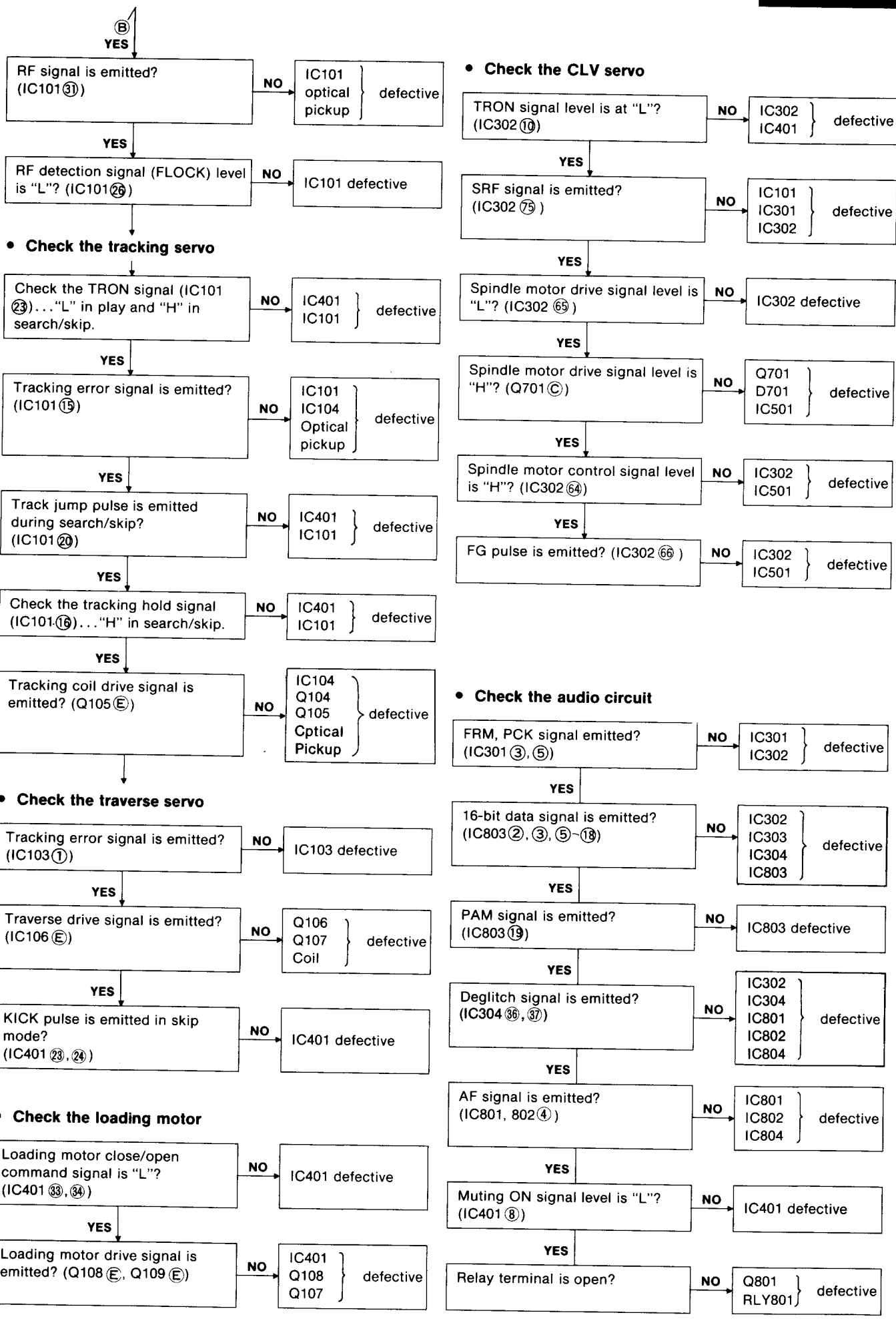
Clock is oscillated (4.2336 MHz)? (IC302 ⑫)
NO → IC301, IC302 } defective
YES

Focus ON signal level is "L"? (IC401 ㊱)
NO → IC401, IC102 } defective
YES

Laser APC signal is ON?
IC101 ⑤ : H
Q101 Ⓒ : L
NO → IC101, Q101 } defective
YES

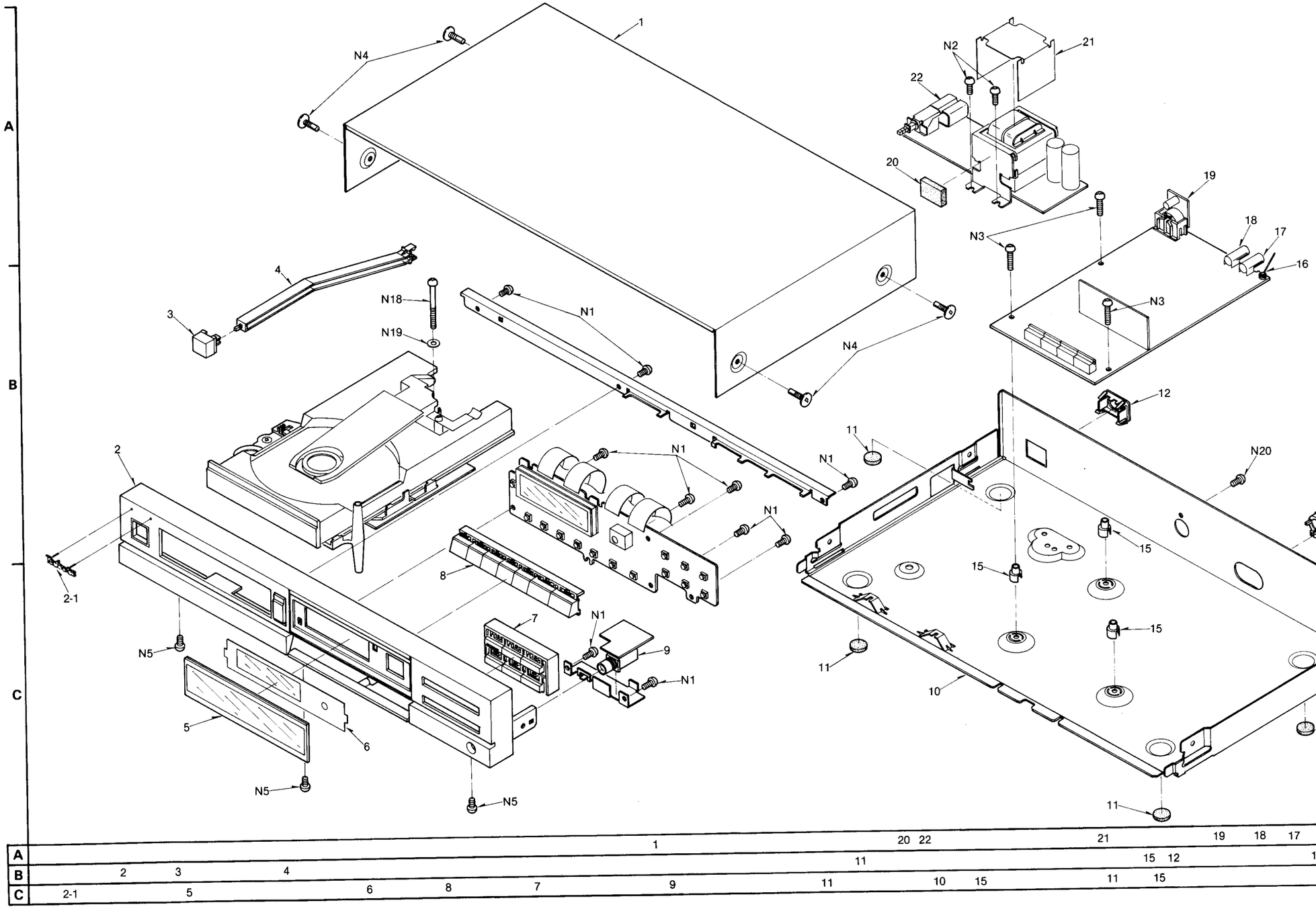
Focus search signal (triangular wave) is emitted? (IC101 ㉟)
NO → IC101 defective
YES

Focus lens moves up and down for a few seconds?
(Not needed to set the disc)
NO → IC104, Q102, 103 optical pickup } defective
Ⓑ


Ⓑ
YES
RF signal is emitted? (IC101㉛)
NO
IC101 optical pickup
defective
YES
RF detection signal (FLOCK) level is "L"? (IC101㉖)
NO
IC101 defective
• Check the tracking servo
Check the TRON signal (IC101 ㉓)..."L" in play and "H" in search/skip.
NO
IC401 IC101
defective
YES
Tracking error signal is emitted? (IC101⑮)
NO
IC101 IC104 Optical pickup
defective
YES
Track jump pulse is emitted during search/skip? (IC101⑳)
NO
IC401 IC101
defective
YES
Check the tracking hold signal (IC101⑯)..."H" in search/skip.
NO
IC401 IC101
defective
YES
Tracking coil drive signal is emitted? (Q105Ⓔ)
NO
IC104 Q104 Q105 Cptical Pickup
defective
• Check the traverse servo
Tracking error signal is emitted? (IC103①)
NO
IC103 defective
YES
Traverse drive signal is emitted? (IC106Ⓔ)
NO
Q106 Q107 Coil
defective
YES
KICK pulse is emitted in skip mode? (IC401㉓,㉔)
NO
IC401 defective
• Check the loading motor
Loading motor close/open command signal is "L"? (IC401㉝,㉞)
NO
IC401 defective
YES
Loading motor drive signal is emitted? (Q108Ⓔ, Q109Ⓔ)
NO
IC401 Q108 Q107
defective
• Check the CLV servo
TRON signal level is at "L"? (IC302⑩)
NO
IC302 IC401
defective
YES
SRF signal is emitted? (IC302㉕)
NO
IC101 IC301 IC302
defective
YES
Spindle motor drive signal level is "L"? (IC302㊺)
NO
IC302 defective
YES
Spindle motor drive signal level is "H"? (Q701Ⓒ)
NO
Q701 D701 IC501
defective
YES
Spindle motor control signal level is "H"? (IC302㊹)
NO
IC302 IC501
defective
YES
FG pulse is emitted? (IC302㊻)
NO
IC302 IC501
defective
• Check the audio circuit
FRM, PCK signal emitted? (IC301③,⑤)
NO
IC301 IC302
defective
YES
16-bit data signal is emitted? (IC803②,③,⑤~⑱)
NO
IC302 IC303 IC304 IC803
defective
YES
PAM signal is emitted? (IC803⑲)
NO
IC803 defective
YES
Deglitch signal is emitted? (IC304㊱,㊲)
NO
IC302 IC304 IC801 IC802 IC804
defective
YES
AF signal is emitted? (IC801, 802④)
NO
IC801 IC802 IC804
defective
YES
Muting ON signal level is "L"? (IC401⑧)
NO
IC401 defective
YES
Relay terminal is open?
NO
Q801 RLY801
defective

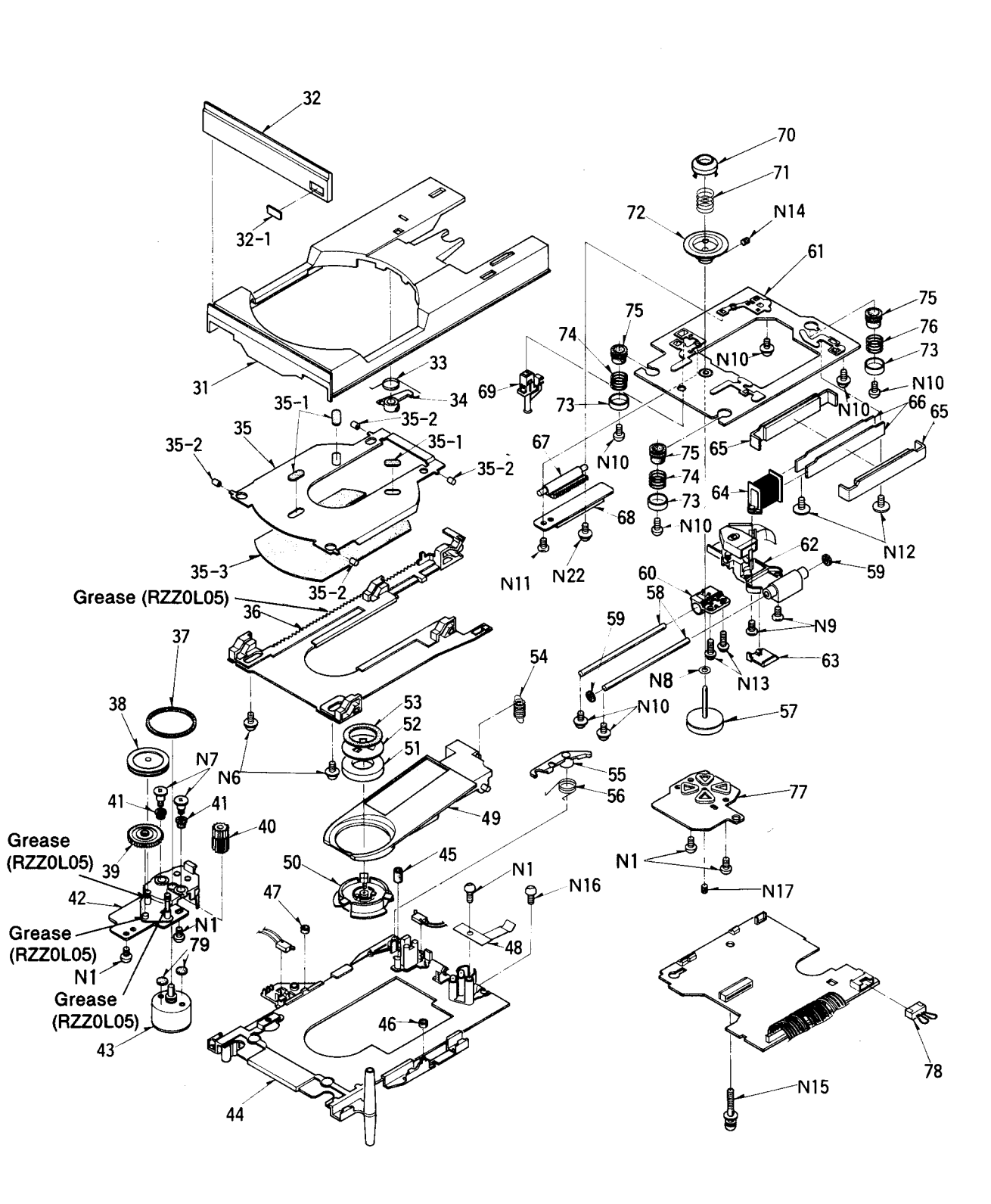
## ■ EXPLODED VIEWS

- Cabinet and chassis parts




| | | |

- **Travers deck parts**




| | | |

# ■ REPLACEMENT PARTS LIST

**Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The " S " mark is service standard parts and may differ from production parts.
5. Ⓚ-marked parts are used for black only, while ○-marked parts are for silver type only.
6. Part other than Ⓚ-and ○-marked are used for both black and silver types.
7. The parenthesized numbers in the columns of description stand for the quantity per set.

**Color**

(K)....Black Type
(S)....Silver Type

| Color | Areas |
|---|---|
| (K) (S) | [M].....U.S.A. |
| (K) (S) | [MC]...Canada. |
| (K) (S) | [E].....Switzerland and Scandinavia. |
| (K) (S) | [EK]....United Kingdom. |
| (K) (S) | [XL]....Australia. |
| (K) (S) | [EG]....F.R. Germany. |
| (K) (S) | [EB]....Belgium. |
| (K) (S) | [EH]....Holland. |
| (K) (S) | [EF]....France. |
| (K) (S) | [Ei].....Italy. |
| (K) (S) | [XA]....Southeast Asia, Oceania, Africa, Middle Near East and Central South America. |
| (K) (S) | [PA]....East PX. |
| (K) (S) | [PE]....European Military. |
| (K) (S) | [PC]....European Audio Club. |

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC1 | AN78M12 | IC |
| IC2 | AN79N12 | IC |
| IC4, 5 ⚠ | SVIFU15 | IC |
| IC11 ⚠ | AN78M05 | IC |
| IC12 ⚠ | AN79N05 | IC |
| IC101 | AN8370S | IC |
| IC102 | MN4053BS | IC |
| IC103, 104 | AN6554NS | IC |
| IC201 | AN6552 | IC |
| IC202 | AN6914 | IC |
| IC301 | AN8371S | IC |
| IC302 | MN6617F | IC |
| IC303 | MN4416S−12 | IC |
| IC304 | MN6618F | IC |
| IC401 | MN15261PDC1 | IC |
| IC402 | MN1280−R | IC |
| IC501 | AN8280LF | IC |
| IC601 | MN1551PDD | IC |
| **IC602** [M, MC] | SVIBX1327M | IC |
| **IC602** [Other areas] | SVIBX1328E | IC |
| IC801 | SVIAL075L | IC |
| IC802 | SVIAL075R | IC |
| IC803 | SVIPCM54KP | IC |
| IC804 | SVIM5238P | IC |
| IC851 | SVINJM4556S | IC |
| **TRANSISTORS** | | |
| Q11 | 2SD973 | Transistor |
| Q12 | 2SB793 | Transistor |
| Q13 | 2SA1309 | Transistor |
| Q101 | 2SC2021 | Transistor |
| Q102 ⚠ | 2SD1055 | Transistor |
| Q103 ⚠ | 2SB822 | Transistor |
| Q104 ⚠ | 2SD1055 | Transistor |
| Q105 ⚠ | 2SB822 | Transistor |
| Q106 ⚠ | 2SD1055 | Transistor |
| Q107 ⚠ | 2SB822 | Transistor |
| Q108 ⚠ | 2SD1055 | Transistor |
| Q109, 110 ⚠ | 2SB822 | Transistor |
| Q111 ⚠ | 2SC2021 | Transistor |
| Q201 | 2SK301 | FET |

| Ref. No. | Part No. | Description |
|---|---|---|
| **TRANSISTORS** | | |
| Q202 | UN4212 | Transistor |
| Q203 | 2SA1309 | Transistor |
| Q601～603 | UN4212 | Transistor |
| Q701 | UN4212 | Transistor |
| Q801 | UN4112 | Transistor |
| **DIODES** | | |
| D1, 2 ⚠ | SVDS1WB40 | Rectifier |
| D3 ⚠ | SVD1SR35200V | Rectifier |
| D11, 12 | MA4082 | Zener Diode |
| D13 | MA4330 | Zener Diode |
| D14 | MA4082 | Zener Diode |
| D101, 102 | MA4056 | Zener Diode |
| D401～403 | MA165 | Diode |
| D600～613 | MA165 | Diode |
| D701 | MA4091 | Zener Diode |
| D801, 802 | MA4056 | Zener Diode |
| D803 | MA165 | Diode |
| **CRYSTAL** | | |
| X301 | SVQ16CKSS | |
| **VARIABLE RESISTORS** | | |
| VR101 | EVND1AA00B53 | Variable Resistor, 5kΩ(B) |
| VR102, 103 | EVND1AA00B14 | Variable Resistor, 10kΩ(B) |
| VR104 | EVND1AA00B53 | Variable Resistor, 5kΩ(B) |
| VR105 | EVND1AA00B14 | Variable Rresistor, 10kΩ(B) |
| VR701 | EVN38CA00B13 | Variable Resistor, 1kΩ(B) |
| **RELAY** | | |
| RLY801 | SFDYG5A237P | Muting |

| Ref. No. | Part No. | Description |
|---|---|---|
| **SWITCHES** | | |
| S1 ⚠ | ESB823V | Power |
| S2 [XA, PA, PE, PC] only ⚠ | SRDSHXW0251 | Voltage Selector |
| S101, 102 | SRDSMLS−2 | Open/Close |
| S601, 602, 604～612, 616, 623, 624 | EVQQS405K | Operation |
| **POWER TRANSFORMER** | | |
| **T1** [M] ⚠ | SLT54JL14A | Power Source |
| **T1** [MC] ⚠ | SLT54JS27C | Power Source |
| **T1** [EK, XL] ⚠ | SLT54JE28E | Power Source |
| **T1** [XA, PA, PE, PC] ⚠ | SLT54JS30E | Power Source |
| **T1** [Other areas] ⚠ | SLT54JS29E | Power Source |
| **COMPONENT COMBINATIONS** | | |
| R601 | EXBP811104K | 100kΩ×11 |
| C2, 3 | EXRFS203ZS | 0.01μF×2 |
| **FLUORESCENT DISPLAY TUBE** | | |
| FL601 | SADD1 | Display |
| **HALL ELEMENT** | | |
| H501, 502 | OH−003 | Hall Element |
| **FUSES** | | |
| **F1** [XA, PA, PE, PC] only ⚠ | XBA2C03TB0 | 250V, T315mA |
| **F1** Except for [M, MC] ⚠ | XBA2C016TB0 | 250V, T160mA |
| **F2** [XA, PA, PE, PC] only ⚠ | XBA2C016TB0 | 250V, T160mA |



| Ref. No. | Part No. | Description | |
|---|---|---|---|
| **CABINET and CHASSIS PARTS** | | | |
| **1** ○ | SKCD10−0S | Cabinet | (1) |
| **1** Ⓚ | SKCD10−0K | Cabinet | (1) |
| **2** ○ | SYYD300SNE | Front Panel | (1) |
| **2** Ⓚ | SYYD300KNE | Front Panel | (1) |
| **2-1** ○ | SGB628 | Badge | (1) |
| **2-1** Ⓚ | SGB628−1 | Badge | (1) |
| **3** ○ | SBC666 | Button | (1) |
| **3** Ⓚ | SBC666−3 | Button | (1) |
| 4 | SUBD2−1 | Rod | (1) |
| 5 | SGUD11−00B | Ornament Plate | (1) |
| 6 | SDUD2−1 | Filter | (1) |
| **7** ○ | SBCD30−1SA | Memory Button | (1) |
| **7** Ⓚ | SBCD30−00A | Memory Button | (1) |
| **8** ○ | SBCD20−1SA | Play Button | (1) |
| **8** Ⓚ | SBCD20−00A | Play Button | (1) |
| 9 | SRDJHLJ15401 | Headphone Jack | (1) |
| **10** [XA, PA, PE, PC] | SGPD10−10A | Chassis | (1) |
| **10** [Other areas] | SGPD10−00A | Chassis | (1) |
| 11 | SRGA008N01 | Foot | (4) |
| **12** [XL] | SJVD0204A | Holder | (1) |
| **12** [Other areas] | SJVD0203A | Holder | (1) |
| 13 | SJFD1 | Holder | (1) |
| **14** [M] | SGTD35 | Name Plate | (1) |
| **14** [MC] | SGTD34 | Name Plate | (1) |
| **14** [E] | SGTD14 | Name Plate | (1) |
| **14** [EK] | SGTD15 | Name Plate | (1) |
| **14** [XL] | SGTD16 | Name Plate | (1) |
| **14** [EG] | SGTD33 | Name Plate | (1) |
| **14** [XA] | SGTD31 | Name Plate | (1) |
| **14** [PA, PE, PC] | SGTD19 | Name Plate | (1) |
| **14** [Other areas] | SGTD32 | Name Plate | (1) |
| 15 | SHE185 | Spacer | (3) |
| 16 | SRQSJ02N01 | Ground Spring | (1) |
| 17 | SRDJ007N05 | Output Jack (R) | (1) |
| 18 | SRDJ007N06 | Output Jack (L) | (1) |
| 19 | SJS6805 | Subcode Jack | (1) |
| 20 | SHGD25 | Cushion Rubber | (1) |
| 21 | SMCD2−1 | Shield Plate | (1) |
| 22 ⚠ | SJVD0203B | AC Socket | (1) |
| **TRAVERSE DECK PARTS** | | | |
| 31 | SIRD1−1 | Case | (1) |
| **32** ○ | SGXD9E−2 | Ornament Plate | (1) |
| **32** Ⓚ | SGXD9E−1 | Ornament Plate | (1) |
| 32-1 | SGBD2−1 | Badge | (1) |
| 33 | SUSD10 | Spring | (1) |
| 34 | SIRD3 | Lever | (1) |
| 35 | SIWD3E | Tray Ass'y | (1) |
| 35-1 | SHGD7−1 | Rubber | (3) |
| 35-2 | SIRD4 | Spacer | (4) |
| 35-3 | SHGD19 | Rubber | (1) |
| 36 | SISD3 | Drive Rack | (1) |
| 37 | SRGB007N02 | Belt | (1) |
| 38 | SDGD10 | Gear | (1) |
| 39 | SDGD11 | Gear | (1) |
| 40 | SDGD12 | Gear | (1) |

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| **TRAVERSE DECK PARTS** | | | |
| 41 | SHGD5 | Rubber | (2) |
| 42 | SISD2E | Bracket | (1) |
| 43 | SJGD2R | Motor Ass'y | (1) |
| 44 | SISD1 | Loading Base | (1) |
| 45 | SHGD11 | Rubber | (1) |
| 46 | SHGD24 | Rubber | (1) |
| 47 | SHGD20 | Rubber | (1) |
| 48 | SUSD16 | Spring | (1) |
| 49 | SIRD5 | Disc Clamper | (1) |
| 50 | SIRD6 | Holder | (1) |
| 51 | SOMD4 | Magnet | (1) |
| 52 | SOYD2 | Yoke | (1) |
| 53 | SHGD8 | Rubber | (1) |
| 54 | SUSD11 | Spring | (1) |
| 55 | SIRD2 | Lever | (1) |
| 56 | SUSD9 | Spring | (1) |
| 57 | SDMD2A | Rotor Ass'y | (1) |
| 58 | SUXD15 | Shaft | (2) |
| 59 | SHGD10 | Rubber | (2) |
| 60 | EWSL03 | Holder | (1) |
| 61 | SISD4E | Traverse Base | (1) |
| 62 ⚠ | SOAD20A | Optical Pick-up Ass'y | (1) |
| 63 | SORD7 | Cover | (1) |
| 64 | SORD5E | Coil | (1) |
| 65 | SOYD3E | Yoke (A) | (2) |
| 66 | SOYD4 | Yoke (B) | (2) |
| 67 | SDGD13 | Gear | (1) |
| 68 | EWS7AJ | Resistance Unit | (1) |
| 69 | SHRD4 | Lock Unit | (1) |
| 70 | SDOD8 | Ring | (1) |
| 71 | SRQA010N04 | Spring | (1) |
| 72 | SDOD7−1 | Turntable Ass'y | (1) |
| 73 | SHRD3 | Holder | (3) |
| 74 | SUSD12 | Spring (A) | (2) |
| 75 | SHGD9 | Rubber | (3) |
| 76 | SUSD13 | Spring (B) | (1) |
| 77 | SXPD220 | Spindle P.C.B. Ass'y | (1) |
| 78 | SRDJ001N14E | Connector Ass'y | (1) |
| 79 | SHGD6 | Rubber | (2) |
| **CONNECTORS** | | | |
| **81** | EMCS0250ZL | Connector (White), CN103 | (1) |
| **81** | EMCS0250ZLB | Connector (Blue), CN101 | (1) |
| **81** | EMCS0250ZLR | Connector (Red), CN102 | (1) |
| **82** | EMCS0350Z | Connector (White), CN104 | (1) |
| **82** | EMCS0550Z | Connector (White), CN202, 801 | (2) |
| **82** | EMCS0650Z | Connector (White), CN701 | (1) |
| **82** | EMCS0950Z | Connector (White), CN11 | (1) |
| **82** | EMCS0950ZMB | Connector (Blue), CN201 | (1) |
| **82** | EMCS0950ZMR | Connector (Red), CN203 | (1) |
| 83 | SJSD0905 | Connector, CN401～404 | (4) |
| 84 | SJS1703 | Connector, CN106 | (1) |
| 85 | EMCS0551ML | Connector, CN105 | (1) |
| **SCREWS and WASHERS** | | | |
| N1 | XTV3+8G | Screw, ⊕3×8 | (15) |
| N2 | XTV3+6JFYR | Screw, ⊕3×6 | (2) |
| N3 | XTV3+14JFYR | Screw, ⊕3×14 | (2) |
| **N4** ○ | SRXG007N10 | Screw | (4) |
| **N4** Ⓚ | SRXG007N51 | Screw | (4) |

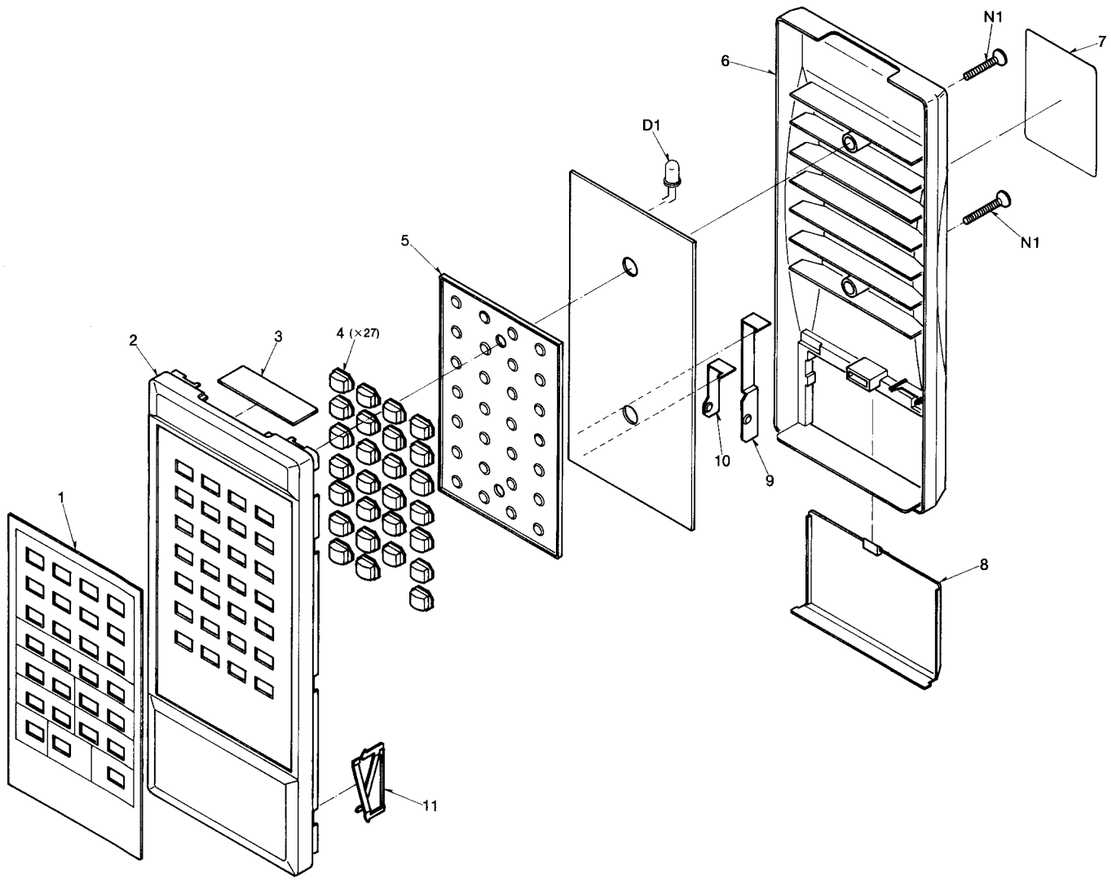
| Ref. No. | Part No. | Description | |
|---|---|---|---|
| **SCREWS and WASHERS** | | | |
| N5 | XTV3+8JFZ | Screw, ⊕3×8 | (3) |
| N6 | XTW3+8T | Screw, ⊕3×8 | (7) |
| N7 | SFXGB20−01 | Screw | (2) |
| N8 | SRXW007N02 | Washer | (1) |
| N9 | XYN26+C4 | Screw, ⊕2.6×4 | (2) |
| N10 | XTV3+10G | Screw, ⊕3×10 | (3) |
| N11 | XTV3+6J | Screw, ⊕3×6 | (1) |
| N12 | SFXGQ06N01 | Screw | (2) |
| N13 | XYN26+W8 | Screw, ⊕2.6×8 | (2) |
| N14 | XXE26D5 | Screw | (1) |
| N15 | SRXG007N11 | Screw | (1) |
| N16 | XYE3+EJ8 | Screw, ⊕3×8 | (1) |
| N17 | SNSD3 | Screw | (1) |
| N18 | XTN3+40JFYR | Screw, ⊕3×40 | (1) |
| N19 | XWE3D8 | Washer | (1) |
| N20 | XTV3+8GFZ | Screw, ⊕3×8 | (1) |
| **PACKING PARTS** | | | |
| **P1** [MC, EF] ○ | SPND38 | Carton Box | (1) |
| **P1** [Other areas] ○ | SPND37 | Carton Box | (1) |
| **P1** [MC, EF] Ⓚ | SPND16 | Carton Box | (1) |
| **P1** [Other areas] Ⓚ | SPND15 | Carton Box | (1) |
| P2 | SPSD26 | Pad, Front | (1) |
| P3 | SPSD27 | Pad, Rear | (1) |
| P4 | SPSD32 | Spacer | (1) |
| P5 | XZB55X40A01 | Polyethylene Bag, Unit | (1) |
| P6 | SRHZJ02N01 | Polyethylene Bag, Remote Control Unit | (1) |
| P7 | SFYF23A35 | Polyethylene Bag, Accessories | (1) |
| **ACCESSORIES** | | | |
| **A1** [M] | SQUD24 | Instruction Book | (1) |
| **A1** [MC] | SQUD25E | Instruction Book | (1) |
| **A1** [EK] | SQUD27 | Instruction Book | (1) |
| **A1** [EI] | SQUD28 | Instruction Book | (1) |
| **A1** [E, EB, EH] | SQUD30E | Instruction Book | (1) |
| **A1** [PA, PC, PE] | SQUD29E | Instruction Book | (1) |
| **A1** [Other areas] | SQUD26 | Instruction Book | (1) |
| **A2** [M, MC] ⚠ | SJA170 | AC Cord | (1) |
| **A2** [XL] ⚠ | SJA173 | AC Cord | (1) |
| **A2** [EK] ⚠ | SFDAC05G02 | AC Cord | (1) |
| **A2** [XA, PA, PC, PE] ⚠ | SJA168−1 | AC Cord | (1) |
| **A2** [Other areas] ⚠ | SJA171 | AC Cord | (1) |
| A3 | SRDH001N01 | Output Cord | (1) |
| **A4** [M, MC] | UM−3NEP−2P | Battery | (2) |
| **A4** [Other areas] | UM−3NE−2P | Battery | (2) |
| A5 [XA, PA, PC, PE] only ⚠ | SJP9215 | Adaptor | (1) |

# ■ REPLACEMENT PARTS LIST AND EXPLODED VIEW
## (Remote Control Unit)

### ● REMOTE CONTROL UNIT

| Ref. No. | Part No. | Description |
|---|---|---|
| IC | | |
| **IC1** [M, MC] | MN6030CA | IC |
| **IC1** [Other areas] | MN6030B | IC |
| TRANSISTOR | | |
| Q1 | UN1231 | Transistor |
| DIODES | | |
| D1 | LN66S | LED |
| D4, 5 | MA154WK | Diode |
| D6, 7 | MA154WA | Diode |
| CERAMIC OSCILLATOR | | |
| **X1** [M, MC] | CSB455EB1T | 455kHz |
| **X1** [Other areas] | CSB420PB1 | 420kHz |

| Ref. No. | Part No. | Description | |
|---|---|---|---|
| CABINET and CHASSIS PARTS | | | |
| 1 | UR64PP124B | Panel | (1) |
| 2 | UR64CS119 | Top Cover | (1) |
| 3 | UR64SB125 | Cover | (1) |
| 4 | UR64BT123A | Button | (27) |
| 5 | UR64CT122 | Spacer | (1) |
| 6 | UR64CS120 | Bottom Cover | (1) |
| 7 | UR64LB126AB | Label | (1) |
| 8 | UR64EC121 | Battery Cover | (1) |
| 9 | UR64TD128 | Terminal ⊖ | (1) |
| 10 | UR64TD127 | Terminal ⊕ | (1) |
| 11 | UR52TD101 | Terminal | (1) |
| SCREW | | | |
| N1 | XTS26+12GFZ | Screw, ⊕2.6×12 | (2) |






# ■ RESISTORS AND CAPACITORS

**Notes:** 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. The " S " mark is service standard parts and may differ from production parts.
4. Unless otherwise specified. All resistors are in OHMS (Ω) K = 1000Ω, M = 1000kΩ. All capacitors are in MICORFARADS (μF), P = $10^{-6}$μF.

## Numbering System of Resistor

**Example**

| ERD | S2 | T | J | 101 |
|---|---|---|---|---|
| Type | Wattage (1/4W) | Shap | Tolerance (± 5%) | Value (1kΩ) |

| ERJ | 8 | GEY | J | 102 | ⬚ |
|---|---|---|---|---|---|
| Type | Wattage (1/8W) | Shape | Tolerance (± 5%) | Value (1kΩ) | Specialuse |

| Resistor Type | | Wattage | | Tolerance | |
|---|---|---|---|---|---|
| ERD | : Carbon | S2 | : 1/4W | J | : ± 5% |
| ERJ | : Chip Type Carbon | 8 | : 1/8W | K | : ± 10% |
| ERO | : Metal Film | | | | |

## Numbering System of Capacitor

**Example**

| ECKD | 1H | 102 | K | C |
|---|---|---|---|---|
| Type | Voltage (50V) | Value (0.001μF) | Tolerance ( ± 10%) | Peculiarity |

| ECEA | 0G | KS | 470 | L |
|---|---|---|---|---|
| Type | Voltage (4V DC) | Peculiarity use | Value (47μF) | Special use |

| GR426 | B | 273 | K | 25 |
|---|---|---|---|---|
| Type | Peculiarity | Value (0.027μF) | Tolerance ( ± 10%) | Voltage (25V) |

| Type | | Voltage | Tolerance |
|---|---|---|---|
| ECEA, AR, REC | : Electrolytic | **ECEA, AR, REC, ECEV Types** | F : ± 1 pF |
| | | 0G : 4V | J : ± 5% |
| | | 0J : 6.3V | K : ± 10% |
| ECEA..N, ARA...N | : Non-Polar Electrolytic | 1A : 10V | M : ± 20% |
| | | 1C : 16V | Z : +80% −20% |
| ECEV...N | : Non-Polar Electrolytic (Chip Type) | 1E : 25V | N : ± 30% |
| | | 1V : 35V | P : +100% −0% |
| ECQV | : TF | 1H : 50V | |
| ECQM | : Polyester | **Others** | |
| ECFR, ECKD, ECFF, ECKR | : Ceramic | 1E : 25V DC | |
| | | 1H : 50V DC | |
| | | 50 : 50V DC | |
| | | 2B : 125V DC | |
| | | KC : 125V AC | |
| RCBS | : Ceramic (Axial Type) | | |

### ● Indication of RCBS type capacitor (Axial type)

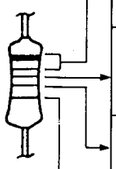
### ● Rated voltage

The rated voltages are indicated by insulating paint colors.

| Rated voltage (DC) | Paint color |
|---|---|
| 16V | Pink |
| 50V | Light-green |

### ● Electrostatic capacity and characteristics

The nominal electrostatic capacites (PF), tolerances and temperature characteristics are indicated by color codes.



| Color band | Brown | Red | Orange | Yellow | Green | Blue | Purple | Gray | White | Black | Gold | Silver |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1st, 2nd color bands (Effective number of nominal electrostatic capacity) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | — | — |
| 3rd color band (Multiplier of nominal electrostatic capacity) | $10^1$ | $10^2$ | $10^3$ | $10^4$ | — | — | — | — | — | $10^0$ | $10^{-1}$ | $10^{-2}$ |
| 4th color band (Tolerances) | — | — | — | — | — | — | — | N | Z | M | J | K |
| 5th color band (Temperature characteristic) | | | | | | | | | | | | |

## ● RESISTORS

| Ref. No. | Part No. | Value |
|---|---|---|
| R11, 12 | ERDS2TJ102 | 1K |
| R13 | ERDS2TJ222 | 2.2K |
| R14 | ERDS2TJ822 | 8.2K |
| R15 | ERDS2TJ100 | 10 |
| R101, 102 | ERDS2TJ821 | 820 |
| R103 | ERDS2TJ154 | 150K |
| R104, 105 | ERDS2TJ104 | 100K |
| R106 | ERDS2TJ154 | 150K |
| R107 | ERDS2TJ101 | 100 |
| R108 | ERDS2TJ474 | 470K |
| R109 | ERDS2TJ222 | 2.2K |
| R110 | ERDS2TJ564 | 560K |
| R111 | ERDS2TJ472 | 4.7K |
| R112 | ERDS2TJ683 | 68K |
| R113 | ERDS2TJ104 | 100K |
| R114 | ERDS2TJ474 | 470K |
| R115 | ERDS2TJ101 | 100 |
| R116 | ERDS2TJ332 | 3.3K |
| R117 | ERDS2TJ564 | 560K |
| R119 | ERDS2TJ222 | 2.2K |
| R120 | ERDS2TJ101 | 100 |
| R121 | ERDS2TJ392 | 3.9K |
| R122 | ERDS2TJ270 | 27 |
| R123 | ERDS2TJ3R3 | 3.3 |
| R124 | ERDS2TJ224 | 220K |
| R125 | ERDS2TJ333 | 33K |
| R126 | ERDS2TJ182 | 1.8K |
| R127 | ERDS2TJ333 | 33K |
| R128 | ERDS2TJ122 | 1.2K |
| R129 | ERDS2TJ103 | 10K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R131 | ERDS2TJ472 | 4.7K |
| R132 | ERDS2TJ103 | 10K |
| R133 | ERDS2TJ153 | 15K |
| R134 | ERDS2TJ101 | 100 |
| R135 | ERDS2TJ270 | 27 |
| R136 | ERDS2TJ3R3 | 3.3 |
| R137 | ERDS2TJ272 | 2.7K |
| R138, 139 | ERDS2TJ333 | 33K |
| R140 | ERDS2TJ122 | 1.2K |
| R141 | ERDS2TJ153 | 15K |
| R142 | ERDS2TJ272 | 2.7K |
| R143 | ERDS2TJ683 | 68K |
| R144 | ERDS2TJ473 | 47K |
| R145 | ERDS2TJ154 | 150K |
| R146, 147 | ERDS2TJ222 | 2.2K |
| R148 | ERDS2TJ223 | 22K |
| R149 | ERDS2TJ334 | 330K |
| R150 | ERDS2TJ822 | 8.2K |
| R151, 152 | ERDS2TJ682 | 6.8K |
| R153 | ERDS2TJ822 | 8.2K |
| R154, 155 | ERDS2TJ222 | 2.2K |
| R156, 157 | ERDS2TJ102 | 1K |
| R158 | ERDS2TJ471 | 470 |
| R159 | ERDS2TJ120 | 12 |
| R160 | ERDS2TJ153 | 15K |
| R161 | ERDS2TJ272 | 2.7K |
| R162 | ERDS2TJ102 | 1K |
| R163 | ERDS2TJ104 | 100K |
| R201 | ERDS2TJ223 | 22K |
| R202 | ERDS2TJ473 | 47K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R203 | ERDS2TJ223 | 22K |
| R204～208 | ERDS2TJ473 | 47K |
| R209 | ERDS2TJ682 | 6.8K |
| R210 | ERDS2TJ224 | 220K |
| R211 | ERDS2TJ223 | 22K |
| R212 | ERDS2TJ101 | 100 |
| R213 | ERDS2TJ392 | 3.9K |
| R214 | ERDS2TJ101 | 100 |
| R215 | ERDS2TJ392 | 3.9K |
| R216, 217 | ERDS2TJ222 | 2.2K |
| R218 | ERDS2TJ473 | 47K |
| R301 | ERDS2TJ224 | 220K |
| R302 | ERDS2TJ333 | 33K |
| R303 | ERDS2TJ221 | 220 |
| R304 | ERDS2TJ562 | 5.6K |
| R305 | ERDS2TJ474 | 470K |
| R401～407 | ERDS2TJ472 | 4.7K |
| R408～413 | ERDS2TJ103 | 10K |
| R414 | ERDS2TJ105 | 1M |
| R501 | ERJ8GEYJ1R5V | 1.5 |
| R502 | ERJ8GEYJ223V | 22K |
| R503, 504 | ERJ8GEYJ560V | 56 |
| R505 | ERJ8GEYJ473V | 47K |
| R601 | ERDS2TJ105 | 1M |
| R701 | ERDS2TJ154 | 150K |
| R702 | ERDS2TJ224 | 220K |
| R703, 704 | ERDS2TJ102 | 1K |
| R705 | ERDS2TJ123 | 12K |
| R706 | ERDS2TJ103 | 10K |
| R707 | ERDS2TJ472 | 4.7K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R708 | ERDS2TJ561 | 560 |
| R709 | ERDS2TJ102 | 1K |
| R710 | ERDS2TJ152 | 1.5K |
| R801, 802 | ERDS2TJ222 | 2.2K |
| R803 | EROS2CKG1101 | 1.1K |
| R804 | EROS2TKG1101 | 1.1K |
| R805, 806 | EROS2TKG1201 | 1.2K |
| R807 | ERDS2TJ391 | 390 |
| R808 | ERDS2TJ104 | 100K |
| R809 | ERDS2TJ391 | 390 |
| R810 | ERDS2TJ104 | 100K |
| R851 | ERDS2TJ123 | 12K |
| R852 | ERDS2TJ121 | 120 |
| R853 | ERDS2TJ822 | 8.2K |
| R854, 855 | ERDS2TJ332 | 3.3K |
| R856 | ERDS2TJ123 | 12K |
| R857 | ERDS2TJ822 | 8.2K |
| R858 | ERDS2TJ121 | 120 |
| R859, 860 | ERDS2TJ680 | 68 |
| R861, 862 | ERDS2TJ391 | 390 |

**REMOTE CONTROL UNIT**

| | | |
|---|---|---|
| R1 | ERDS2TJ1R0 | 1 |

## ● CAPACITORS

| Ref. No. | Part No. | Value |
|---|---|---|
| C1 ⚠ | ECKDKC103PF | 0.01 |
| C4, 5 | REC1E102M1 | 1000 |
| C6, 7 | AR1C010M0 | 1 |
| C11, 12 | ECEA1CU222 | 2200 |
| C13, 14 | ECEA0JU221 | 220 |
| C15 | ECEA1EU470 | 47 |
| C18 | ECEA1HU470 | 47 |
| C101, 102 | ECEA1CKS100 | 10 |
| C103 | RCBS1C103MYY | 0.01 |
| C104 | ECQM1H104KV | 0.1 |
| C105 | RCBS1H221KBY | 220P |
| C106 | ECEA1HSN010 | 1 |
| C108 | ECEA1HSN2R2 | 2.2 |
| C109 | ECEA1HSN0R1 | 0.1 |
| C110 | ECQM1H123KV | 0.012 |
| C111 | ECQM1H152KV | 0.0015 |
| C112 | ECQM1H223KV | 0.022 |
| C114 | ECEA1HSN010 | 1 |
| C115 | ECEA1HSNR22 | 0.22 |
| C116 | ECQM1H123KV | 0.012 |
| C117 | RCBS1H681KBY | 680P |
| C118 | ECQM1H103KV | 0.01 |
| C119 | RCBS1C103MYY | 0.01 |
| C120, 121 | RCBS1H102KBY | 0.001 |
| C122 | RCBS1H681KBY | 680P |
| C123, 124 | RCBS1H102KBY | 0.001 |
| C125 | ECEA1HKS0R1 | 0.1 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C126 | RCBS1H220JLY | 22P |
| C127 | ECEA1HKS010 | 1 |
| C128 | ECFR1H104ZFM | 0.1 |
| C129, 130 | ECEA1CKS100 | 10 |
| C133 | RCBS1H681KBY | 680P |
| C134 | ECEA0JKS220 | 22 |
| C135 | ECEA1HKS010 | 1 |
| C136 | RCBS1H221KBY | 220P |
| C137 | ECQM1H333KV | 0.033 |
| C138 | RCBS1H682MXY | 0.0068 |
| C139 | RCBS1H182MXY | 0.0018 |
| C140 | ECEA1HKSR33 | 0.33 |
| C141 | ECEA0JKS470 | 47 |
| C142, 143 | ECEA0JKS220 | 22 |
| C144 | RCBS1C103MYY | 0.01 |
| C145 | ECEA0JKS220 | 22 |
| C146 | ECQV1H104JZ | 0.1 |
| C147 | RCBS1C103MYY | 0.01 |
| C148 | ECKR1H102KB | 0.001 |
| C201, 202 | ECQM1H104JV | 0.01 |
| C301 | RCBS1H150JCY | 15P |
| C302 | ECEA1VKN2R2 | 2.2 |
| C303 | ECQM1H153KV | 0.015 |
| C304 | ECQM1H154KV | 0.15 |
| C305 | ECQM1H104KV | 0.1 |
| C306 | RCBS1H102KBY | 0.001 |
| C307 | ECEA1HUR47 | 0.47 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C308 | ECQM1H333KV | 0.033 |
| C309 | RCBS1H102KBY | 0.001 |
| C310 | ECQM1H104KV | 0.1 |
| C312 | RCBS1H220JCY | 22P |
| C313 | RCBS1H6R8KCY | 6.8P |
| C314 | ECQV1H104JZ | 0.1 |
| C315 | RCBS1C103MYY | 0.01 |
| C317～319 | RCBS1C103MYY | 0.01 |
| C320 | ECQV1H104JZ | 0.1 |
| C321, 322 | RCBS1H681KBY | 680P |
| C401 | ECEA0JU470 | 47 |
| C402 | ECFR1H104ZFM | 0.1 |
| C403 | ECKR1H102KB | 0.001 |
| C404 | ECKR1H103ZF | 0.01 |
| C501 | ECEV1EV6R8R | 6.8 |
| C502 | GR426B273K25 | 0.027 |
| C503, 504 | ECEV1CN4R7R | 4.7 |
| C505 | GR426B104M25 | 0.1 |
| C506 | GR426F334Z25 | 0.33 |
| C507 | GR426F224Z25 | 0.22 |
| C508, 509 | GR426F104Z25 | 0.1 |
| C510 | GR426F104Z25 | 0.1 |
| C601 | RCBS1C103MYY | 0.01 |
| C701 | ECQM1H333KV | 0.033 |
| C702 | ECFR1H104ZFM | 0.1 |
| C703 | ECEA0JU470 | 47 |
| C801 | AR1C221M0 | 220 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C802 | ECEA0JU470 | 47 |
| C803 | AR1C221M0 | 220 |
| C804 | ECEA0JU470 | 47 |
| C805, 806 | CQS2B391JCF | 390P |
| C807, 808 | CQS2B103JCF | 0.01 |
| C809, 810 | ARA1CN220M0T | 22 |
| C811, 812 | ECKR1H102KB | 0.001 |
| C813 | ECKR1H103ZF | 0.01 |
| C814, 815 | ECKR1H102KB | 0.001 |
| C816 | ARA1C470M0T | 47 |
| C817 | REC1E331M0 | 330 |
| C818 | ECKD1H221KB | 220P |
| C851, 852 | ECFF1E104ZF | 0.01 |
| C853, 854 | ECKR1H332KB | 0.0033 |
| C855, 856 | ECEA1AU471 | 470 |

**REMOTE CONTROL UNIT**

| | | |
|---|---|---|
| C1 [M, MC]<br>C1 [Other areas] | ECKD1H101KB<br>ECKD1H471KB | 100P<br>470P |
| C2 [M, MC]<br>C2 [Other areas] | ECKD1H101KB<br>ECKD1H121KB | 100P<br>120P |



# ■ TERMINAL FUNCTION OF LSI

## ● MN6617 (Digital Signal Processing : EFM Decoder, Error Correction, CLV Servo)

| Pin No. | Mark | I/O Devision | Function |
|---|---|---|---|
| 1 | BLKCK | O | Sub-code block (Q data) clock (75 Hz) |
| 2 | $\overline{\text{CLDCK}}$ | O | Sub-code frame (Q data) clock (7.35 kHz) |
| 3 | $\overline{\text{SUBQ}}$ | O | Sub-code (Q data) output |
| 4 | CRC | O | Sub-code (Q data) CRC check (Not used, open) |
| 5 | $\overline{\text{RST}}$ | I | Reset signal input (reset at "L") |
| 6 | MLD | I | Command load input |
| 7 | MCLK | I | Command clock input |
| 8 | MDATA | I | Command data input |
| 9 | DMUTE | I | Muting control (muting ON at "H") |
| 10 | $\overline{\text{TRON}}$ | I | Tracking servo ON signal (tracking servo ON at "L") |
| 11 | STAT | O | Processing condition (CRC, OTC, CLVOK, TT STOP) output |
| 12 | SMCK | O | Clock output (4.2336 MHz) |
| 13 | PMCK | O | Pitch control clock output (Not used, open) |
| 14 | ITC | I | Track counter input signal (Not used, connected to +5V) |
| 15 | $\overline{\text{TEST}}$ | I | Test mode selection (Not used, connected to +5V) |
| 16 | X2 | O | Clock output (16.9334 MHz) |
| 17 | X1 | I | Clock input (16.9344 MHz) |
| 18 | SEL | I | DA output parallel/serial selection (serial at "L") |
| 19 | LDG/WDCK | O | L channel deglitch signal/serial data word clock. |
| 20 | RDG | O | R channel deglitch signal. |
| 21 | DEMPH | O | De-emphasis ON signal (de-emphasis ON at "H") |
| 22 | IPFLAG | O | Interpolation flag (interpolation at "H") |
| 23 | FLAG0 | O | Error flag (error at "H") |
| 24 | FLAG6 | O | 16 K RAM address reset signal (reset at "H") |
| 25 | XCK | O | Clock (16.9334 MHz) output (Not used, open) |
| 26 | DA15/ SRDATA | O | 16-bit data output/serial data output (MSB first) |
| 27 | DA14/ SRDATAX | O | 16-bit data output/serial data output (LSB first) |
| 28 | DA13/SRCK | O | 16-bit data output/serial data beat clock. |
| 29 | DA12/WDCK | O | 16-bit data output/serial data word clock (Not used) |
| 30 | DA11/ BYTCK | O | 16-bit data output/serial data byte clock (Not used) |
| 31 | GND | I | GND terminal |
| 32 | DA10/RIL | O | 16-bit data output/RIL signal |
| 33 | DA9/RESY | O | 16-bit data output/ Resynchronizing signal |

| Pin No. | Mark | I/O Devision | Function |
|---|---|---|---|
| 34 | DA8/FCLV | O | 16-bit data output/Synchronizing detection signal (Not used) |
| 35 | DA7/ IPBYTE | O | 16-bit data output/Interpolation flag for each byte (Not used) |
| 36 | DA6/IPSEL | I/O | 16-bit data output/ interpolation inhibit (Not used) |
| 37 | DA5/FLAG5 | O | 16-bit data output/C2 decoder correction flag 3 (Not used) |
| 38 | DA4/FLAG4 | O | 16-bit data output/C2 decoder correction flag 2 (Not used) |
| 39 | DA3/FLAG3 | O | 16-bit data output/C2 decoder correction flag 1 (Not used) |
| 40 | DA2/FLAG2 | O | 16-bit data output/C1 decoder correction flag 2 (Not used) |
| 41 | DA1/FLAG1 | O | 16-bit data output/C1 decoder correction flag 1 (Not used) |
| 42 | DA0/FLCK0 | O | 16-bit data output/Crystal frame clock |
| 43 ～ 50 | D7 ～ D0 | I/O | 16 K RAM data output |
| 51 | RAMOE | O | 16 K RAM $\overline{\text{OE}}$ signal |
| 52 | RAMWE | O | 16 K RAM $\overline{\text{WE}}$ signal |
| 53 ～ 63 | RAMA 0 ～ RAMA10 | O | 16 K RAM address signal (RAMA0 : LSB, RAMA10: MSB) |
| 64 | PC | O | Spindle motor ON signal (ON at "L") |
| 65 | EC | O | Spindle motor drive signal |
| 66 | FG | I | Spindle motor FG signal input |
| 67 | —— | —— | —— |
| 68 | —— | —— | —— |
| 69 | —— | —— | —— |
| 70 | —— | —— | —— |
| 71 | —— | —— | —— |
| 72 | PCK | I | PLL extract clock input (4.3218 MHz) |
| 73 | VDD | I | Power supply (connected to +5V) |
| 74 | EFM | I | EFM signal input (PLL) |
| 75 | SRF | I | EFM signal input (DSL) |
| 76 | DO | I | Drop-out signal (Drop-out at "H") |
| 77 | CLVS | O | 11T stereo OK signal (OK at "H") |
| 78 | FPC | O | PLL frequency compari sion signal |
| 79 | BSSEL | O | PLL frequency in take operation signal. |
| 80 | —— | —— | —— |
| 81 | —— | —— | —— |
| 82 | —— | —— | —— |
| 83 | SUBC | O | Sub-code serial output data |
| 84 | SBCK | I | Clock for sub-code serial output |

## • MN6618 (Digital Filter)

| Pin No. | Mark | I/O Device | Function |
|---|---|---|---|
| 1 | ——— | —— | ——————— |
| 2 | D012 | O | 16-bit parallel deta output |
| 3 | D011/SCK | O | 16-bit parallel data output/ serial output bit clock |
| 4 | D010/SOUT | O | 16-bit parallel data output/ serial output data |
| 5 | GND | I | GND terminal |
| 6 | D09 | O | 16-bit parallel data |
| 7 | ——— | —— | ——————— |
| 8 | D08 | O | 16-bit parallel data |
| 9 | D07 | O | 16-bit parallel data |
| 10 | ——— | —— | ——————— |
| 11 | ——— | —— | ——————— |
| 12 | D06 | O | 16-bit parallel data |
| 13 | D05 | O | 16-bit parallel data |
| 14 | D04 | O | 16-bit parallel data |
| 15 | D03/2RLCK | O | 16-bit parallel data/RL signal |
| 16 | ——— | —— | ——————— |
| 17 | ——— | —— | ——————— |
| 18 | D02/WCK | O | 16-bit parallel data/serial output word clock |
| 19 | D01 | O | 16-bit parallel data |
| 20 | D00 | O | 16-bit parallel data (LSB) |
| 21 | MDATA | I | Command data input |

| Pin No. | Mark | I/O Device | Function |
|---|---|---|---|
| 22 | ——— | —— | ——————— |
| 23 | MCLK | I | Command clock input |
| 24 | MLD | I | Command load input |
| 25 | ——— | —— | ——————— |
| 26 | $\overline{RST}$ | I | Reset signal input (reset at "L") |
| 27 | VDD | I | Power supply (connected to +5V) |
| 28 | LRCK | I | R/L signal |
| 29 | ——— | —— | ——————— |
| 30 | SFT | I | Serial data input clock |
| 31 | SIN | I | Serial data input |
| 32 | ——— | —— | ——————— |
| 33 | X OUT | O | Clock output (Not used) |
| 34 | X IN | I | Clock input (16.9344 MHz) |
| 35 | OSEL | I | DA output parallel/serial selection. (parallel at "H") |
| 36 | LDGL | O | L channel deglitch signal |
| 37 | RDGL | O | R channel deglitch signal |
| 38 | VDD | I | Power supply (connected to +5V) |
| 39 | D015 | O | 16-bit parallel data (MSB) |
| 40 | D014 | O | 16-bit parallel data |
| 41 | ——— | —— | ——————— |
| 42 | D013 | O | 16-bit parallel data |

## • AN8371S (Data Slice and PLL)

| Pin No. | Mark | I/O Devision | Function |
|---|---|---|---|
| 1 | VEE | I | Power supply (connected to –5V) |
| 2 | SRF | O | RF signal output data-sliced into digital value |
| 3 | EFM | O | EFM signal output synchronized with PCK |
| 4 | D·GND | I | GND terminal (digital system) |
| 5 | PCK | O | Clock output extracted from SRF |
| 6 | VCC | I | Power supply (connected to +5V) |
| 7 | VA | I | VCO free ran frequency adjusting current input |
| 8 | VC1 | I | Capacitor connection for VCO oscillation frequency |
| 9 | VC2 | I | Capacitor connection for VCO oscillation frequency |
| 10 | VR | I | Resistor connection for VCO oscillation frequency |
| 11 | PD | I | Capacitor connection for PLL DO protection |

| Pin No. | Mark | I/O Devision | Function |
|---|---|---|---|
| 12 | PL1 | I | PLL loop filter constant connection |
| 13 | PL2 | I | PLL loop filter constant connection |
| 14 | FPC | I | Frequency comparison error signal input. |
| 15 | RF | I | RF signal input |
| 16 | ARF | O | RF signal output with AGC applied |
| 17 | AGC | I | ARF signal input for AGF drop-out detection |
| 18 | AC | I | AGC loop filter constant connection |
| 19 | DO | O | Drop-out detection pulse output |
| 20 | A·GND | I | GND terminal (analog system) |
| 21 | DSL | I | RF signal input for data slicer |
| 22 | SLC | I | Slice level control signal input |
| 23 | FC1 | I | Data slicer filter capacitor connection |
| 24 | FC2 | I | Data slicer filter capacitor connection |



## • AN8370S (Optical Servo Control)

| Pin No. | Mark | I/O Devision | Function |
|---|---|---|---|
| 1 | VEE | I | Power supply (connected to –5V) |
| 2 | LSA | I | Phase difference input (A) |
| 3 | GND | I | GND terminal |
| 4 | LSB | I | Phase difference input (B) |
| 5 | APC | O | Auto laser power control output |
| 6 | TEOUT | O | Tracking error signal output |
| 7 | TEG | I | Tracking error gain adjusting input |
| 8 | TE– | I | Phase difference-voltage conversion (–) |
| 9 | TE + | I | Phase difference-voltage conversion (+) |
| 10 | APC – | O | Laser power inversion input |
| 11 | C·MEM | I | Capacitor connection for phase difference memory |
| 12 | APC + | I | Laser power non-inversion input |
| 13 | VREF | O | Reference current generation |
| 14 | SENSE | O | Selector output (track-crossed) |
| 15 | HIN | I | Tracking hold circuit input |
| 16 | HOUT | O | Tracking hold circuit output |
| 17 | SPCNT | O | Track-cross speed control output (not used, grounded) |
| 18 | C·MSP | I | Track-cross reference speed setting capacitor connection (not used, grounded) |
| 19 | C·AF | I | Auto focus timer capacitor connection |
| 20 | KICK R/$\overline{F}$ | O | Track kick signal output |
| 21 | VCC | I | Power supply (connected to +5V) |
| 22 | CNT1 | I | Control input ($\overline{FOON}$ : Focus servo ON signal) |

| Pin No | Mark | I/O Devision | Function |
|---|---|---|---|
| 23 | CNT2 | I | Control input ($\overline{TRON}$ : Tracking servo ON signal) |
| 24 | CNT3 | I | Control input (KICKF : Kick direction [forward] command) |
| 25 | CNT4 | I | Control input (KICKR : Kick direction [reverse] command) |
| 26 | $\overline{F·LOCK}$ | O | Focus lock signal output |
| 27 | C·FBDO | O | Capacitor connection for inversion RF high speed detection |
| 28 | C·SBDO | O | Capacitor connection for inversion RF low speed detection |
| 29 | C·SBRT | O | Capacitor connection for non-inversion RF low speed detection |
| 30 | C·FBRT | O | Capacitor connection for non-inversion RF high speed detection |
| 31 | RF OUT | O | RF signal output |
| 32 | BDO | O | Drop-out detection output |
| 33 | RFIN | I | RF signal input |
| 34 | S·OUT | O | Focus search signal output |
| 35 | C·LW | I | Capacitor connection for triangular wave generation |
| 36 | FE·OUT | O | Focus error signal output |
| 37 | FEG | I | Focus error gain adjusting input |
| 38 | FE·REF | I | Focus error comparison voltage generation |
| 39 | PDB | I | Photo detector current input (B) |
| 40 | IVB | O | Current/voltage conversion output (B) |
| 41 | IVA | O | Current/voltage conversion output (A) |
| 42 | PDA | I | Photo detector current input (A) |

## • MN1551PDD (Remote Control Signal Processing)

| Pin No. | Mark | Signal | I/O Device | Function |
|---|---|---|---|---|
| 1 | VDD | —— | I | Power supply (connected to +5V) |
| 2 | P52 | —— | O | Data output |
| 3 | P52 | —— | O | Data output |
| 4 ∫ 6 | P40 ∫ P42 | D0 ∫ D2 | I | Key strobe |
| 7 ∫ 10 | P00 ∫ P03 | D3 ∫ D6 | I | Key strobe |
| 11 ∫ 14 | P10 ∫ P13 | D7 ∫ DA | I | Key strobe |
| 15 | P20 | —— | I | Remote control signal input |
| 16 | P21 | —— | —— | ——————— |
| 17 | P22 | —— | —— | ——————— |

| Pin No. | Mark | Signal | I/O Device | Function |
|---|---|---|---|---|
| 18 | P23 | —— | —— | ——————— |
| 19 | P30 | —— | —— | ——————— |
| 20 | P31 | —— | —— | ——————— |
| 21 | P32 | —— | —— | ——————— |
| 22 | P33 | —— | —— | ——————— |
| 23 | P50 | —— | —— | ——————— |
| 24 | P51 | —— | O | Key output |
| 25 | RST | RESET | I | Reset signal input |
| 26 | OSC2 | —— | I | ——————— |
| 27 | OSC1 | SMCK | I | Clock input |
| 28 | VSS | GND | I | GND terminal |

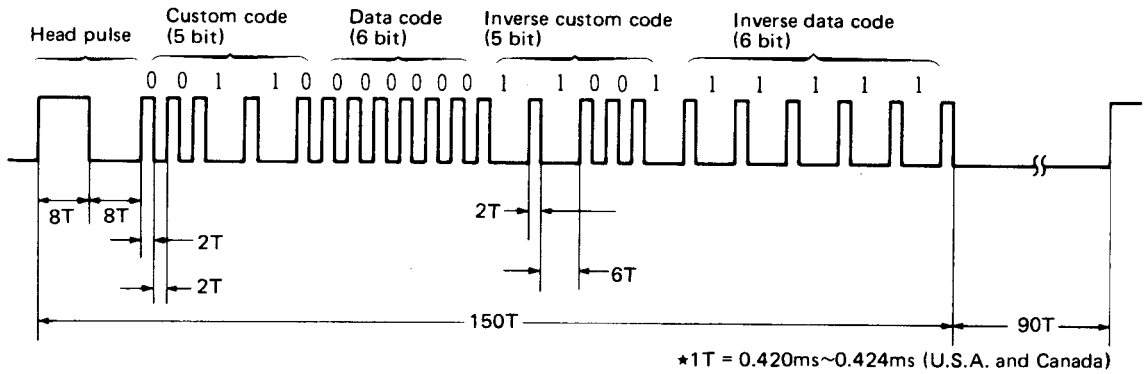
## • MN15261PDC1 (System Control and FL Drive)

| Pin No. | Mark | Signal | I/O Device | Function |
|---|---|---|---|---|
| 1 | VSS | GND | I | GND terminal |
| 2 | X0 | ——— | O | Not used (Open) |
| 3 | XI | ——— | I | Not used (Open) |
| 4 | P00 | $\overline{\text{TTON}}$ | O | Spindle motor control signal (ON · OFF command) |
| 5 | P01 | M DATA | O | Command data output |
| 6 | P02 | MCLK | O | Command clock output |
| 7 | P03 | MLD | O | Command load output |
| 8 | P10 | M-RELAY | O | Muting relay control |
| 9 | P11 | D-MUTE | O | Muting control |
| 10 | P12 | $\overline{\text{SYNC REC}}$ | O | Synchro recording control (Not used) |
| 11 | P13 | $\overline{\text{SYNC SRT}}$ | O | Direct operation control (Not used) |
| 12 | $\overline{\text{SYNC}}$ | ——— | O | Not used (Open) |
| 13 | $\overline{\text{RST}}$ | RESET | I | Reset signal input (reset at "L") |
| 14 | $\overline{\text{IRQ}}$ | BLOCK | I | Sub-code block (Q data) clock (75 Hz) input |
| 15 ∫ 18 | P50 ∫ P53 | ——— | I | Key scan input |
| 19 | $\overline{\text{SBT}}$ | $\overline{\text{CLDCK}}$ | I | Sub-code frame clock (7.35 kHz) |
| 20 | $\overline{\text{SBD}}$ | SUBQ | I | Sub-code Q data input |
| 21 | P20 | SEEK | O | Rough search ON · OFF signal |
| 22 | P21 | $\overline{\text{TRAV}}$ | O | Traverse servo control signal |
| 23 | P22 | $\overline{\text{REV}}$ | O | Traverse reverse command signal |
| 24 | P23 | $\overline{\text{FWD}}$ | O | Traverse forward command signal |
| 25 | P30 | CNT4 | O | Optical servo IC control signal (KICKR : Kick direction [Reverse] command) |
| 26 | P31 | CNT3 | O | Optical servo IC control signal (KICKF : Kick direction [Forward] command) |
| 27 | P32 | CNT2 | O | Optical servo IC control signal ($\overline{\text{TRON}}$ : Tracking servo) |
| 28 | P33 | CNT1 | O | Optical servo IC control signal ($\overline{\text{FOON}}$ : Focus servo) |
| 29 | P40 | STAT | I | Key input strobe and processing status input from signal processing LSI traverse position detection. |
| 30 | P41 | $\overline{\text{COMP}}$ | I | Traverse position input |
| 31 | P42 | $\overline{\text{FLOCK}}$ | I | Optical servo condition (focus) input |
| 32 | P43 | $\overline{\text{SENSE}}$ | I | Optical servo condition (track cross) input |
| 33 | PE0 | $\overline{\text{CLOSE}}$ | O | Loading motor close command (ON at "L") |
| 34 | PE1 | $\overline{\text{OPEN}}$ | O | Loading motor open command (ON at "L") |
| 35 | P60 | FFRST | O | Not used (Open) |
| 36 | P61 | ——— | O | ——— |
| 37 | DAC | DAC DATA | O | Traverse drive output |
| 38 | VPP | ——— | I | FL drive power supply (connected to −34V) |
| 39 ∫ 52 | D0 ∫ DD | ——— | O | FL grid signal and key scan signal |
| 53 ∫ 61 | S8 ∫ S0 | ——— | O | FL anode signal |
| 62 | OSC 2 | ——— | I | Not used (Open) |
| 63 | OSC 1 | ——— | I | Clock input |
| 64 | VDD | ——— | I | Power supply (connected to +5V) |

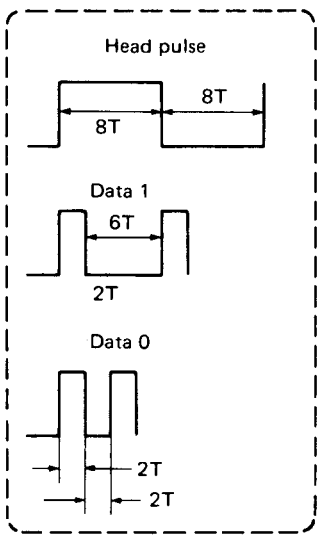
## • AN8280LF (Spindle Motor Drive)

| Pin No. | Mark | I/O Device | Function |
|---|---|---|---|
| 1 | FGP | O | FG pulse output |
| 2 | VCC | I | Power supply |
| 3 | PC | I | Motor drive command input and capacitor connection for phase compesation |
| 4 | SC | O | Current detection |
| 5 | B1 | O | Spindle motor drive signal output |
| 6 | B2 | | |
| 7 | A2 | | |
| 8 | A1 | | |
| 9 | HB | O | Hall element bias voltage output |
| 10 | DCR | I | Reference voltage input |
| 11 | FAO | O | Loop filter amplifier constant connection |
| 12 | FIA | I | Spindle motor control and loop filter amplifier constant connection |
| 13 | H2− | I | Hall element's Hall voltage input (inversion) |
| 14 | H2+ | I | Hall element's Hall voltage input (non-inversion) |
| 15 | HI− | I | Hall element's Hall voltage input (inversion) |
| 16 | HI+ | I | Hall element's Hall voltage input (non-inversion) |

- **Remote control transmitter data code (MN6030).**



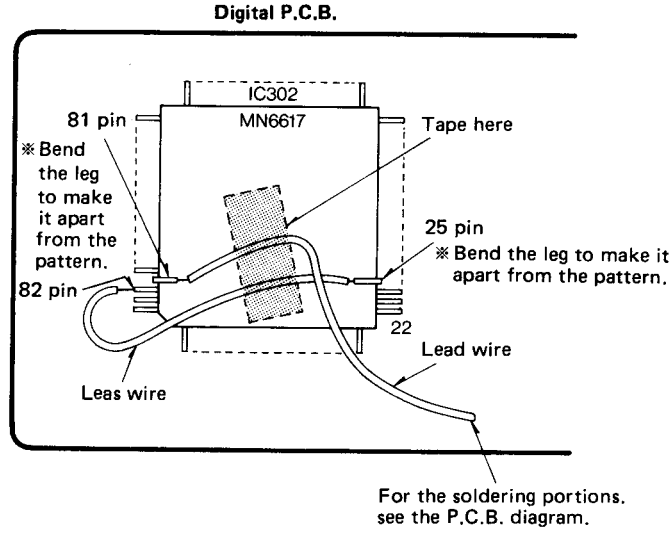

★1T = 0.420ms~0.424ms (U.S.A. and Canada)
1T = 0.454ms~0.460ms (Europe and Others)



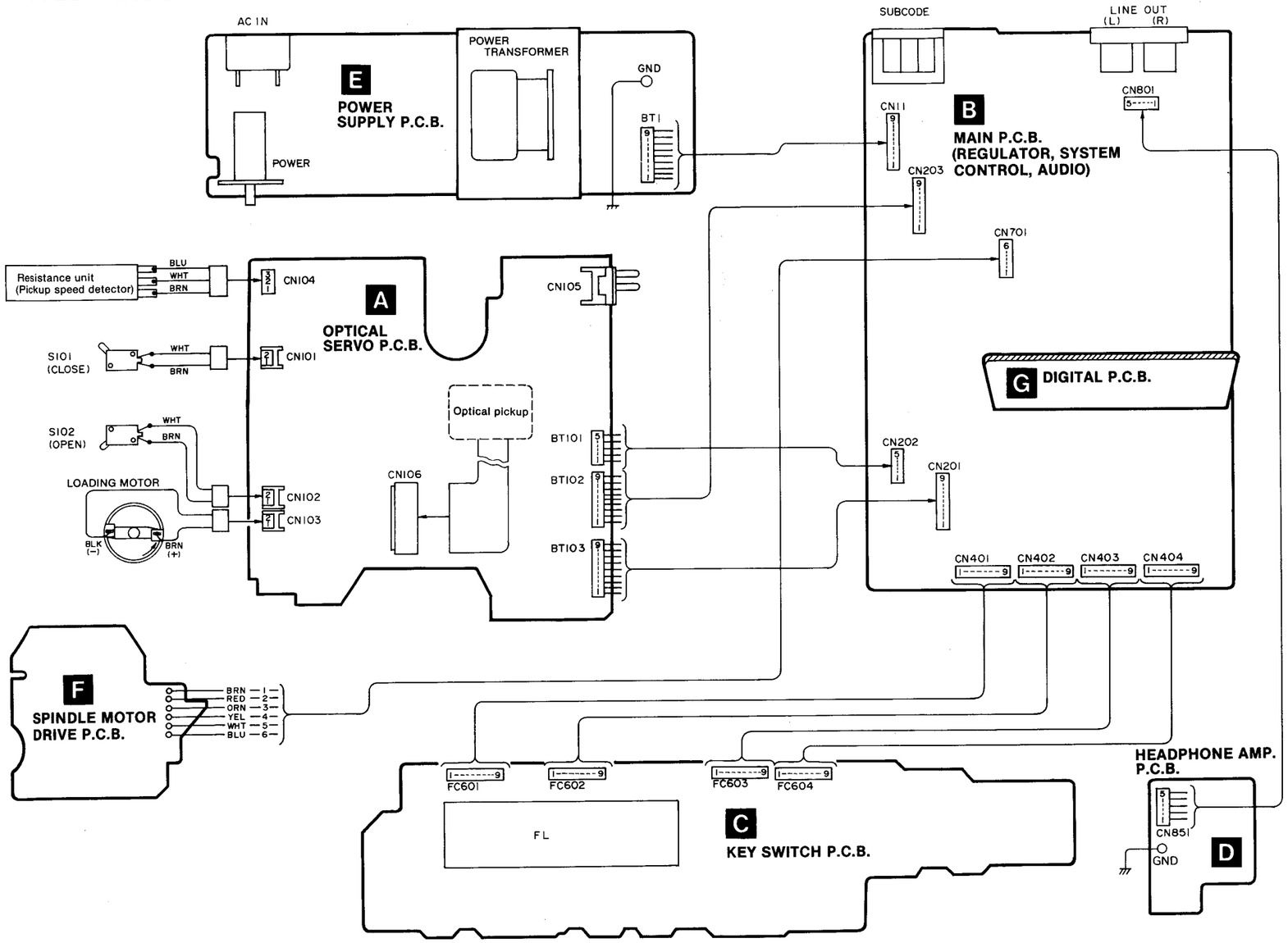

| Control Button | Data Code | Control Button | Data Code |
|---|---|---|---|
| 1 | 000010 | clear | 110100 |
| 2 | 100010 | A←→B repeat | 000100 |
| 3 | 010010 | repeat | 111000 |
| 4 | 110010 | M scan | 111100 |
| 5 | 001010 | recall | 100100 |
| 6 | 101010 | ◀◀ search | 001000 |
| 7 | 011010 | search ▶▶ | 101000 |
| 8 | 111010 | ⏮ skip | 010000 |
| 9 | 000110 | skip ⏭ | 110000 |
| 0 | 100110 | ⏸ pause | 011000 |
| memory | 010101 | play ▶ | 010100 |
| ⏮◀◀ index skip | 001101 | index | 101000 |
| index skip ▶▶⏭ | 001100 | time mode | 101001 |

## ■ LEAD WIRE ARRANGMENT FOR DIGITAL P.C.B.

- When replacing MN6617 (IC302), arrange the lead wire as shown below.

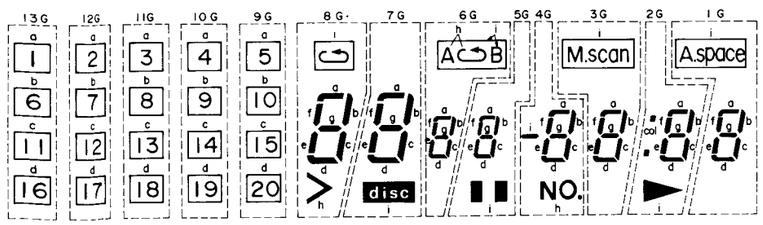


## ■ PRINTED CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM




## ■ INTERNAL CONNECTIONS OF FL

- **Grid connection diagram**



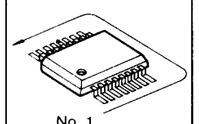

- **Anode connection table**

| Pin NO. | 4 (13G) | 6 (12G) | 8 (11G) | 10 (10G) | 12 (9G) | 14 (8G) | 16 (7G) | 18 (6G) | 20 (5G) | 22 (4G) | 24 (3G) | 26 (2G) | 28 (1G) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5(a) | 1 | 2 | 3 | 4 | 5 | a | a | a | a | a | a | a | a |
| 7(b) | 6 | 7 | 8 | 9 | 10 | b | b | b | b | b | b | b | b |
| 9(c) | 11 | 12 | 13 | 14 | 15 | c | c | c | c | c | c | c | c |
| 11(d) | 16 | 17 | 18 | 19 | 20 | d | d | d | d | d | d | d | d |
| 19(e) | — | — | — | — | — | e | e | e | e | e | e | e | e |
| 21(f) | — | — | — | — | — | f | f | f | f | f | f | f | f |
| 23(g) | — | — | — | — | — | g | g | g | g | g | g | g | g |
| 25(h) | — | — | — | — | — | > | — | A ⟲ | — | NO. | — | col | — |
| 27(i) | — | — | — | — | — | ⟲ | disc | B | ▮▮ | — | M.scan | ▶ | A.space |

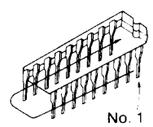


- **Terminal guide of IC's, transistors and diodes**

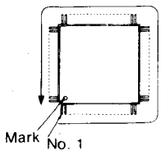
AN8370S ····· 42pin
MN4053BS ····· 16pin
AN6554NS ····· 14pin
MN4416S ····· 24pin
AN8371S ····· 24pin
MN1551PDD ····· 28pin



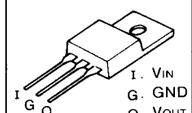

AN6552 ····· 8pin
AN6914 ····· 8pin
MN15261PDC ····· 64pin
SVIPCM54KP ····· 28pin
SVIM5238PA ····· 8pin



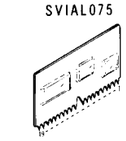

MN6617F ····· 84pin
MN6618F ····· 42pin



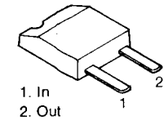

AN78M12, AN78M05




SVIAL075

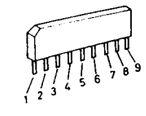


SVIFU15

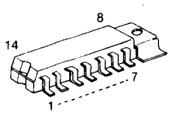



AN79N12, AN79N05

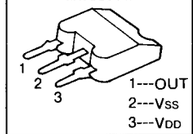
SVINJM4556S



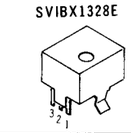
AN8280LF



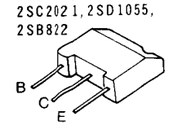
MN1280R



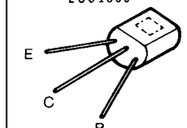

SVIBX1327M
SVIBX1328E



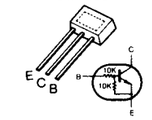
2SD973, 2SB793,
2SC2021, 2SD1055,
2SB822



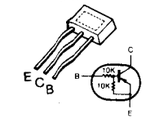
2SC1309



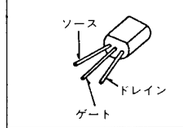
UN4212



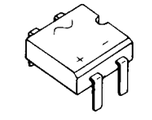
UN4112



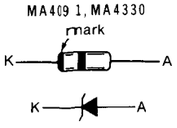
2SK301



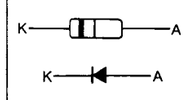

SVDS1WB40



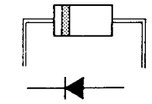
MA4082, MA4056,
MA4091, MA4330




MA165



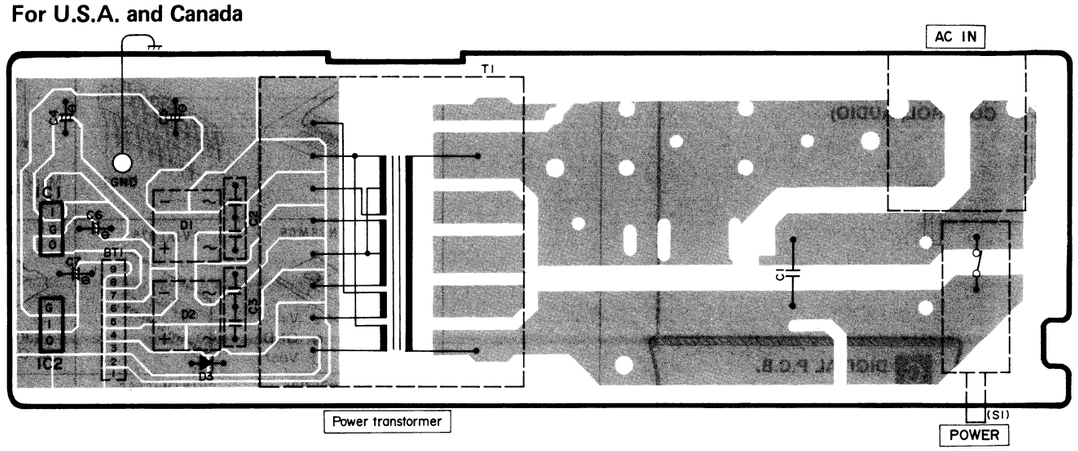

SVDISR35200V



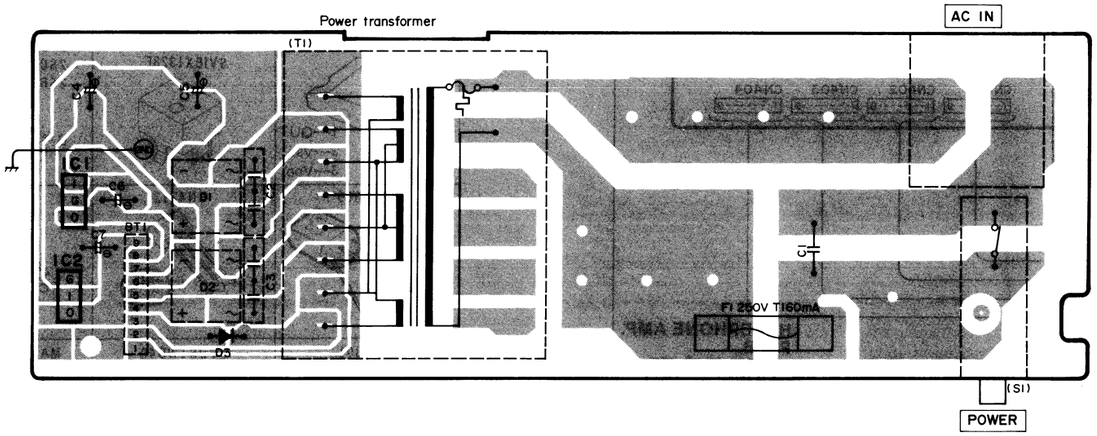
## ■ PRINTED CIRCUIT BOARDS

### E (Power supply P.C.B.)

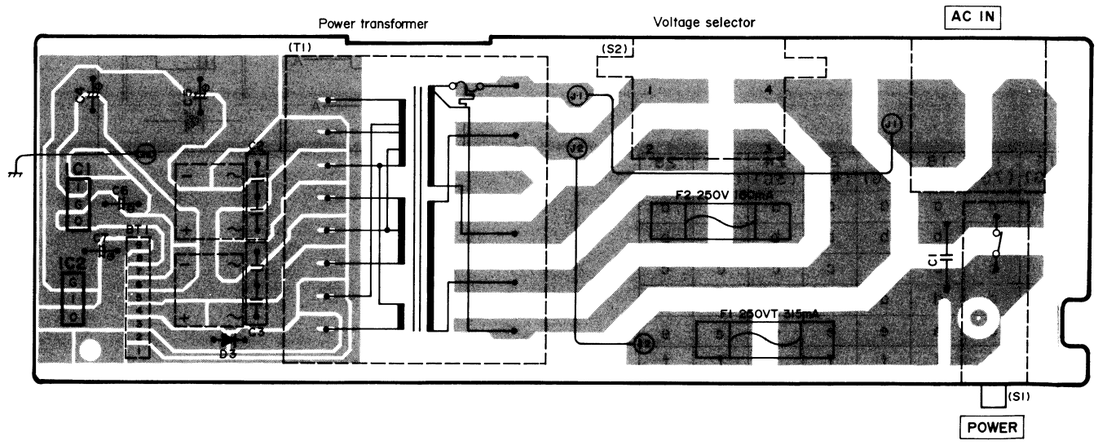
- For U.S.A. and Canada



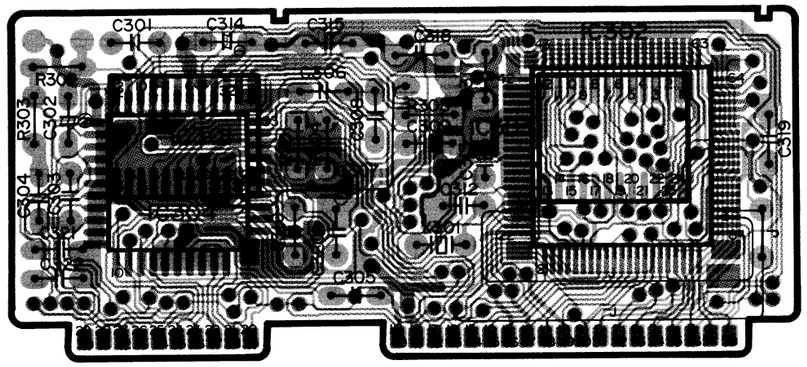

- For United Kingdom, Australia and Contnental Europe



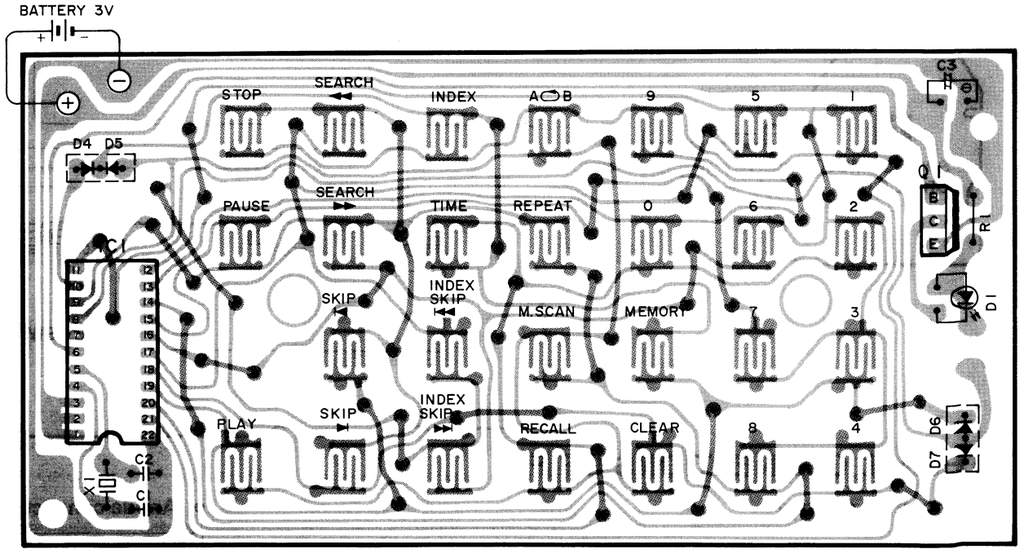

- For Others




### G (Digital P.C.B.)



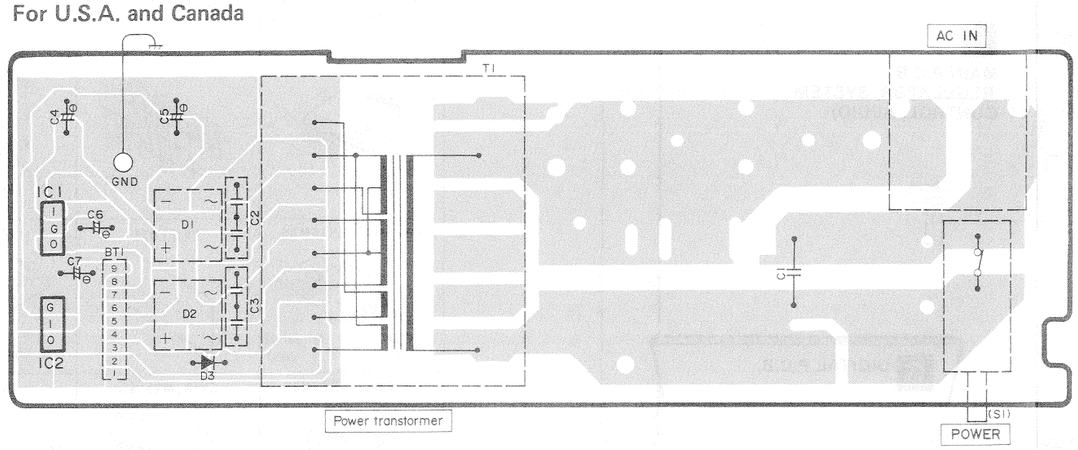

- Remote Control Transmitter



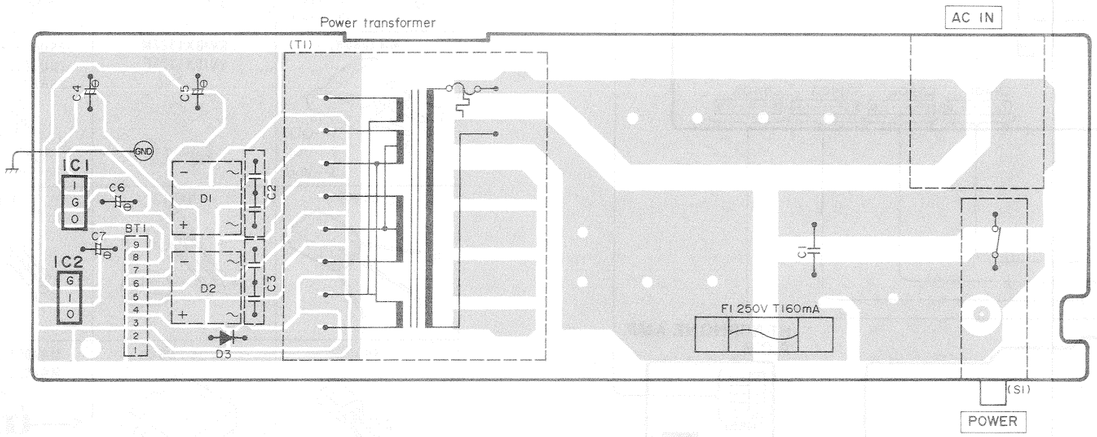
## ■ PRINTED CIRCUIT BOARDS

### E (Power supply P.C.B.)

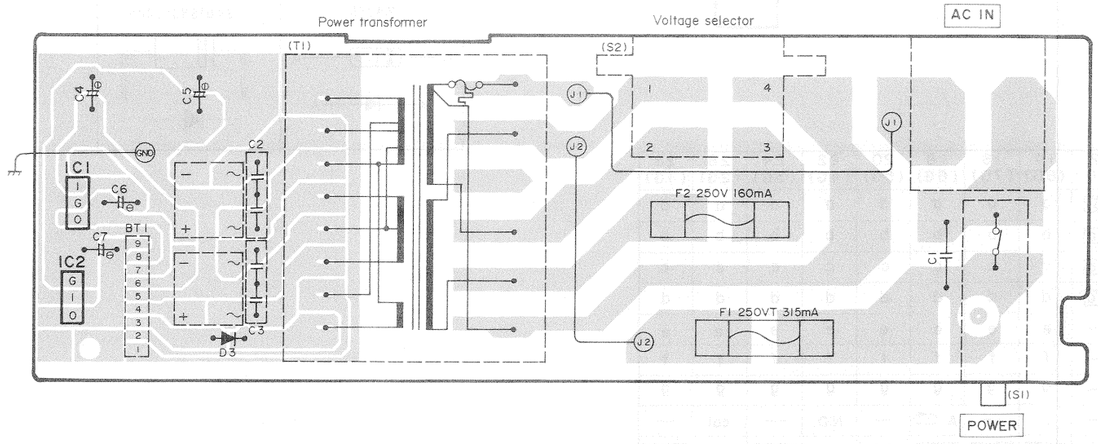
- For U.S.A. and Canada



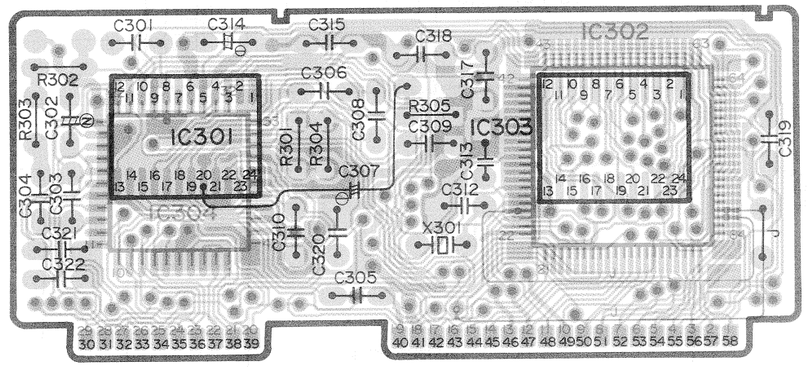

- For United Kingdom, Australia and Contnental Europe



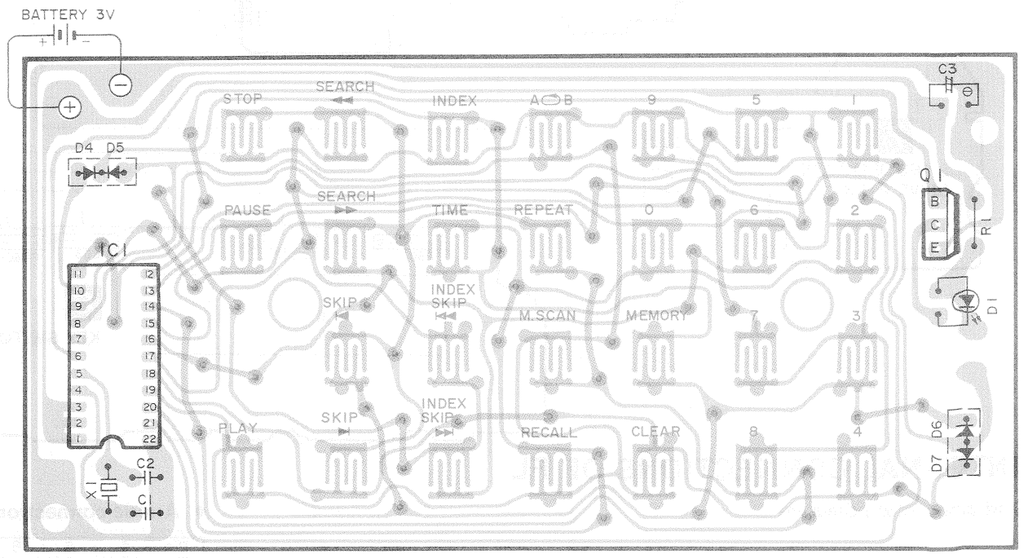

- For Others




### G (Digital P.C.B.)

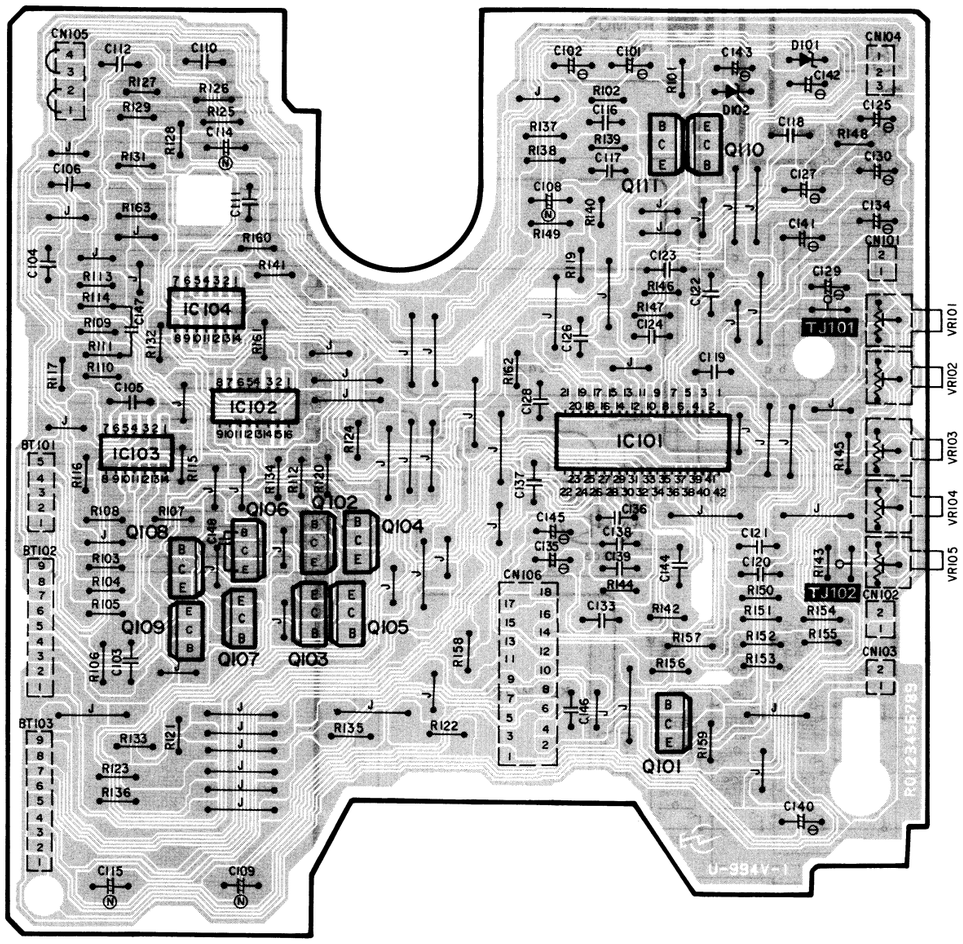



- Remote Control Transmitter

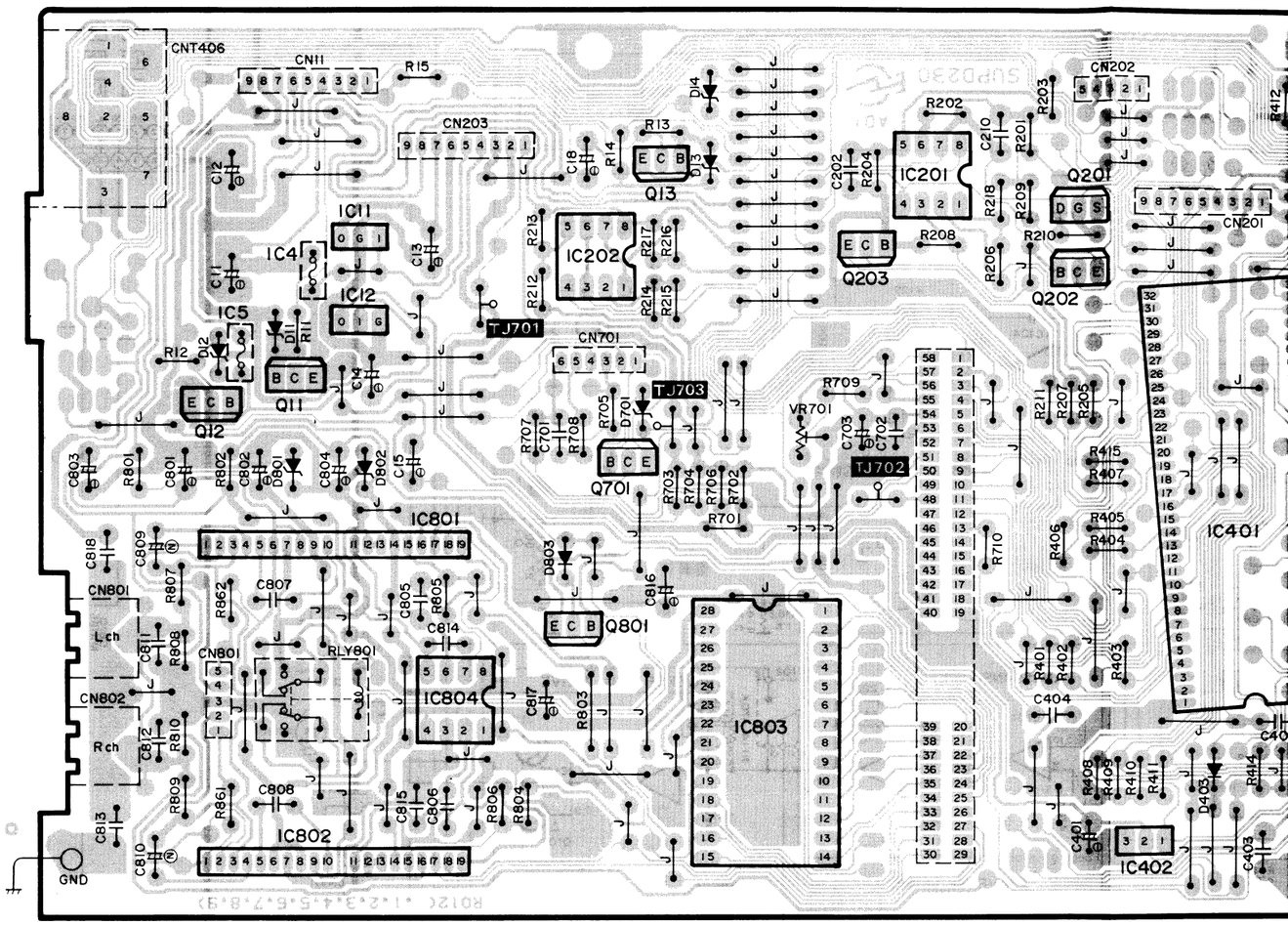


11 12 13 14 15 16 17 18 19 20 21

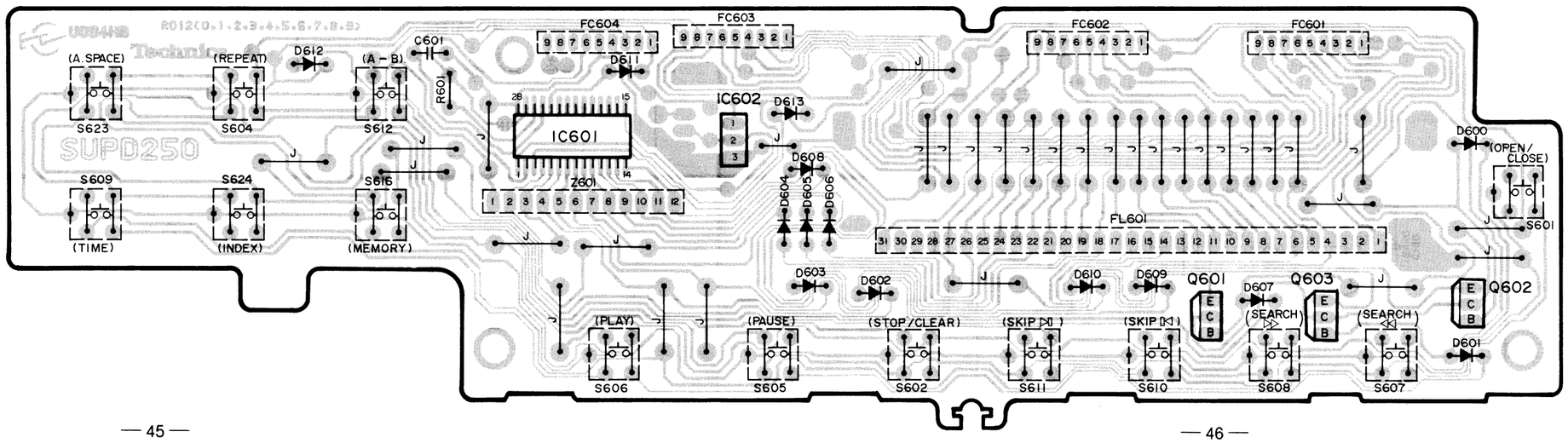
**A** (Optical servo P.C.B.)




**B** (Main P.C.B. : Regulator, system control, audio)

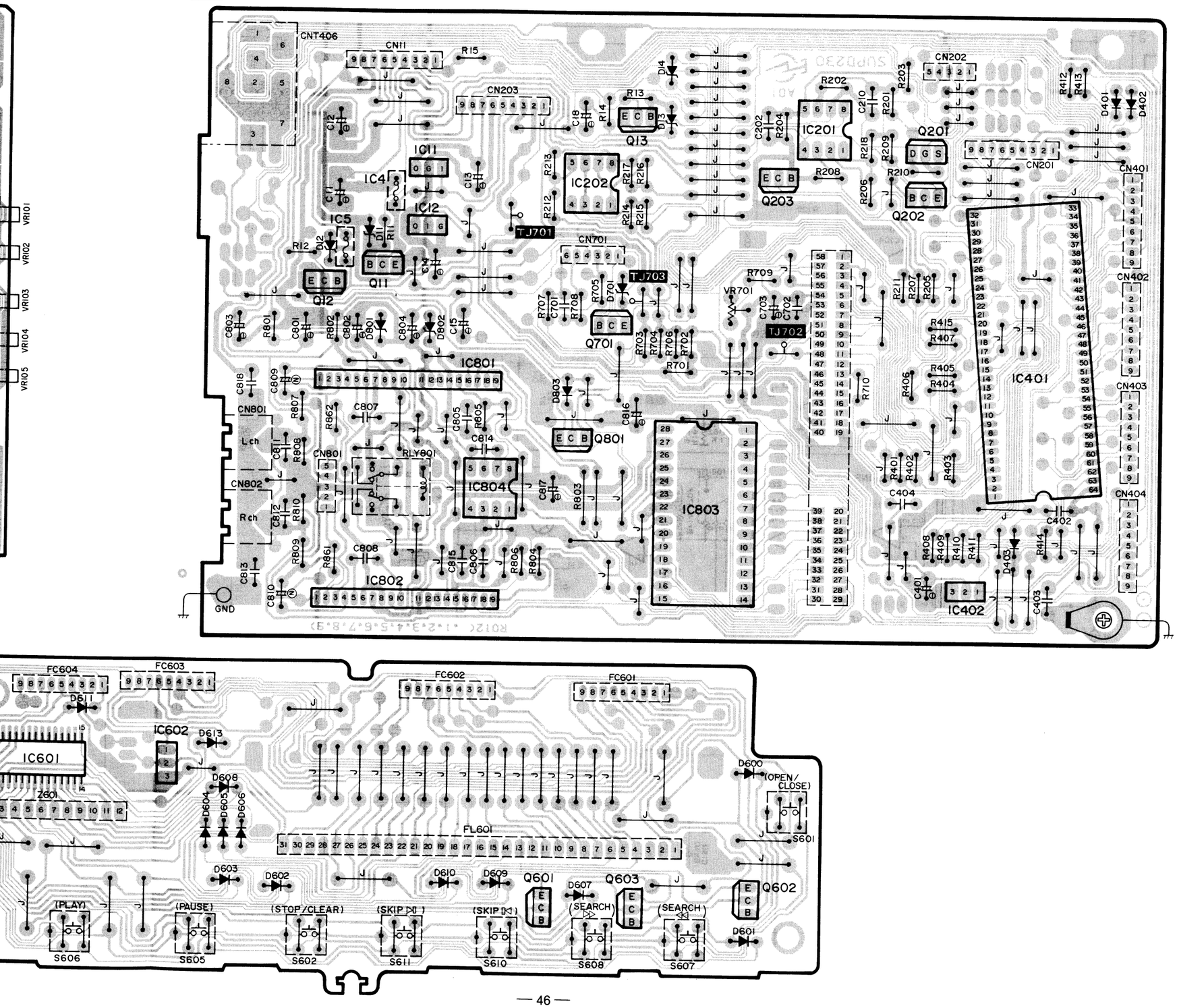



**C** (Key switch P.C.B.)

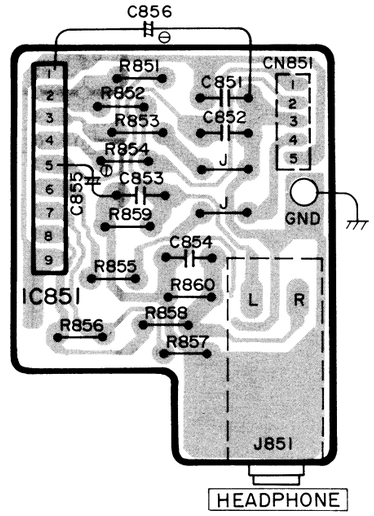


15 16 17 18 19 20 21 22 23 24 25

## B (Main P.C.B. : Regulator, system control, audio)

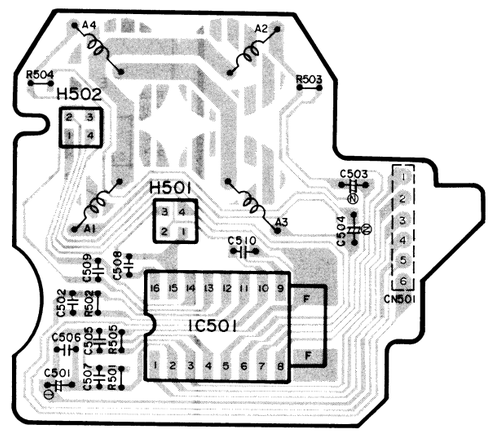



## D (Heaphone amp. P.C.B.)



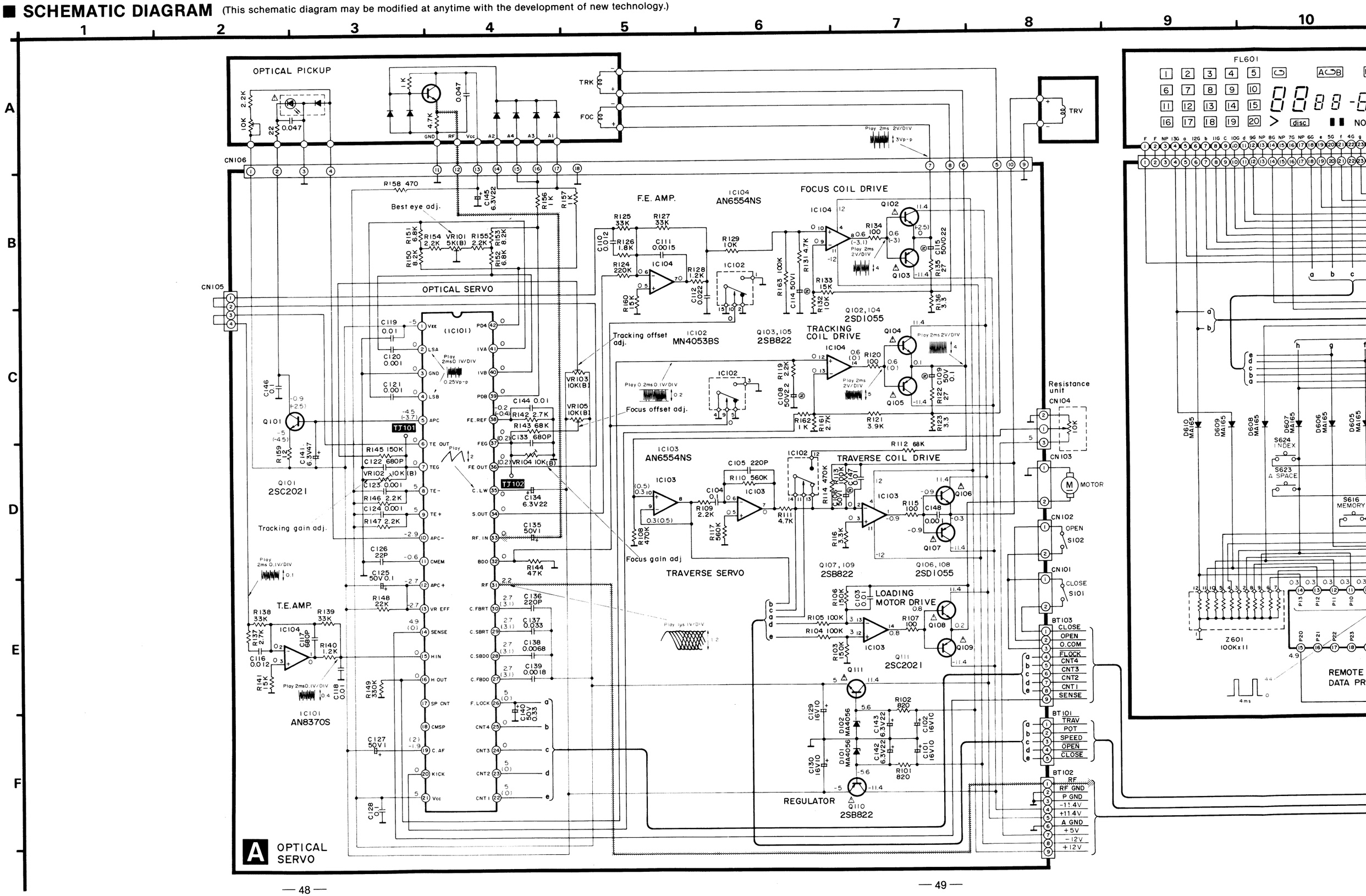

## F (Spindle motor drive P.C.B.)

**Notes:** The spindle motor drive circuit board is made by iron. It is very difficult to replace the parts on the circuit board. So, the repair parts are supplied in the from of finished P.C.B.

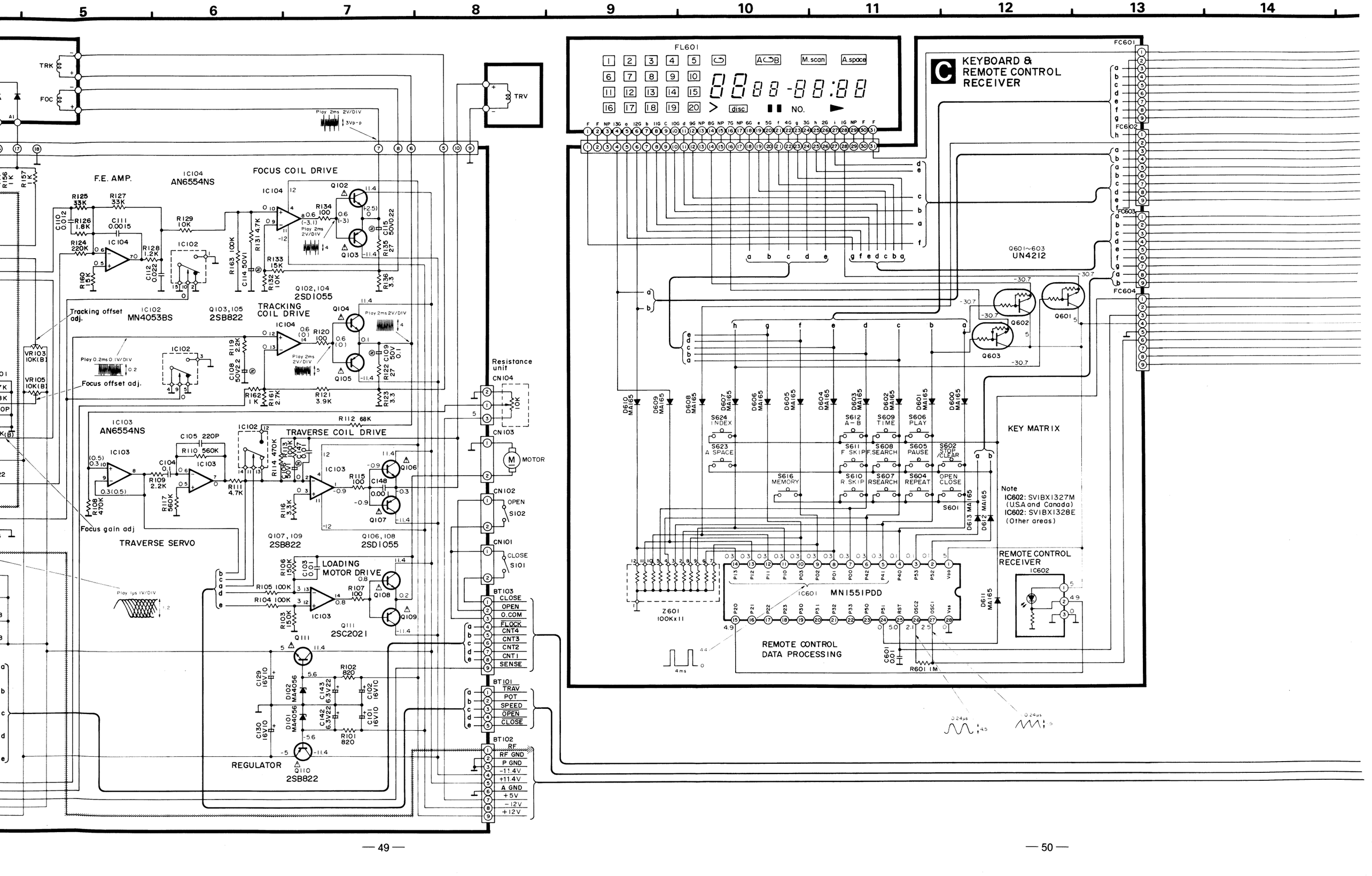


SL-P300 SL-P300

## ■ SCHEMATIC DIAGRAM (This schematic diagram may be modified at anytime with the development of new technology.)



opment of new technology.)



# B FL DRIVE, SYSTEM CONTROL, REGULATOR & AUDIO

IC401 MN15261PDC FL DRIVE / SYSTEM CONTROL

IC402 MN1280-R RESET SIGNAL GENERATION

IC201 AN6552

IC803 SVIPCM54KP D/A CONVERTER

REGULATOR IC11 AN78M05 IC12 AN79N05 IC5 SVIFU15

IC202 AN6914

IC804 SVIM5238P

IC801 SVIAL075L IC802 SVIAL075R AUDIO (DIGLITCH, LPF)

TRAVERSE SERVO

Q201 2SK301 Q202 UN4212 Q203 2SA1309 Q11 2SD973 Q12 2SB793 Q13 2SA1309 Q701 UN4212 Q801 UN4112

IC1 AN78M12 IC2 AN79N12

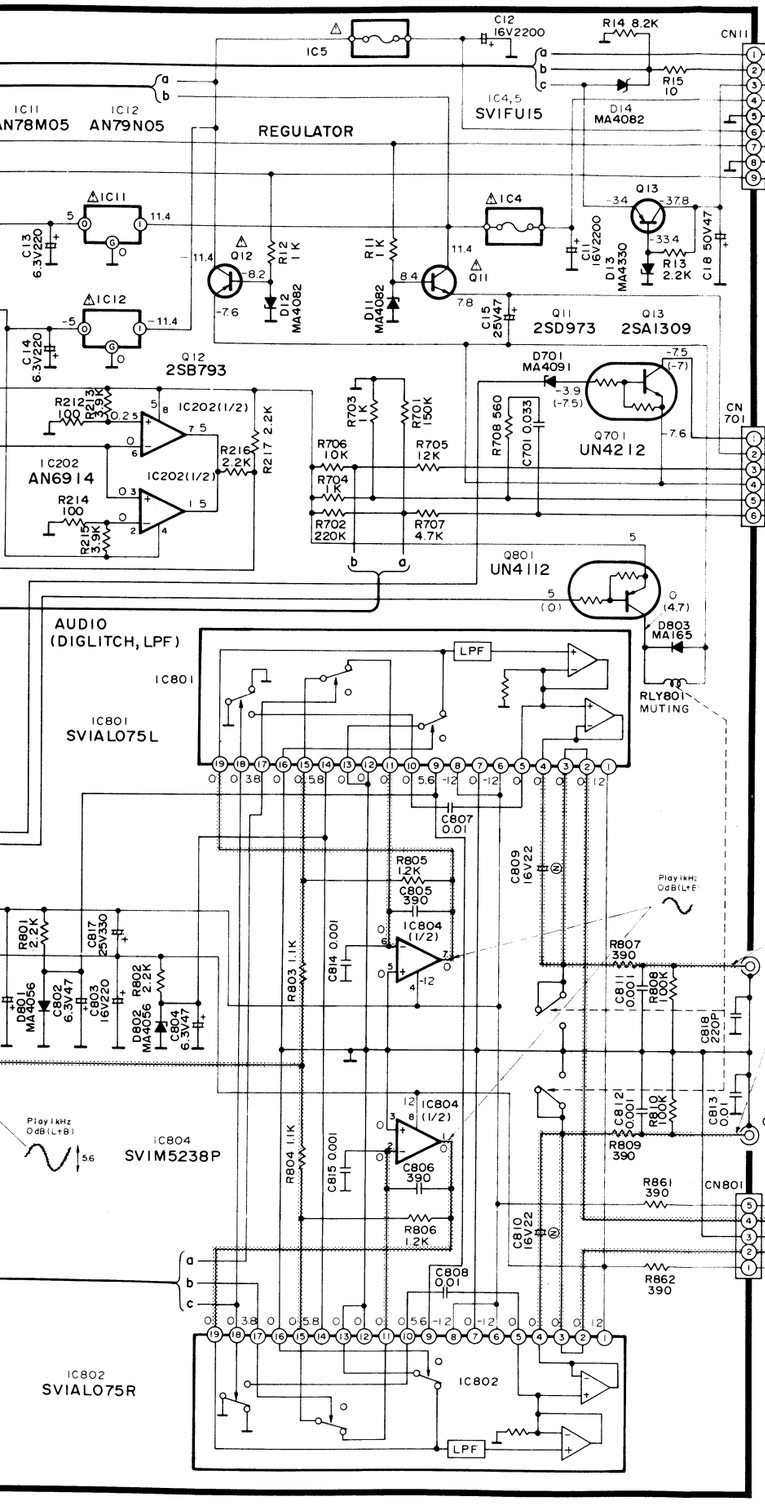
CNT406 SUBCODE

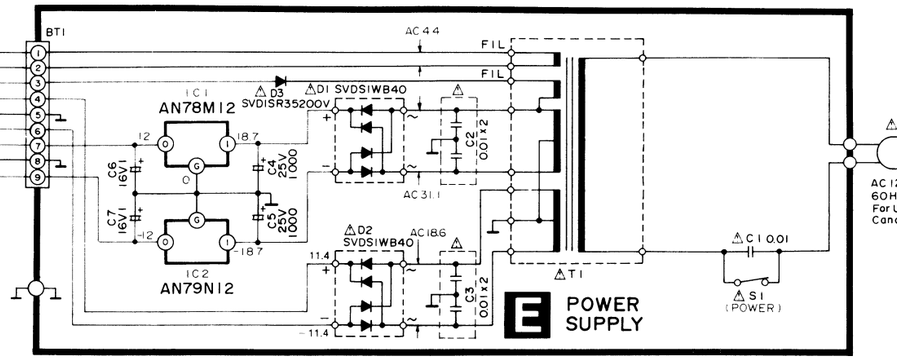
PLL adj

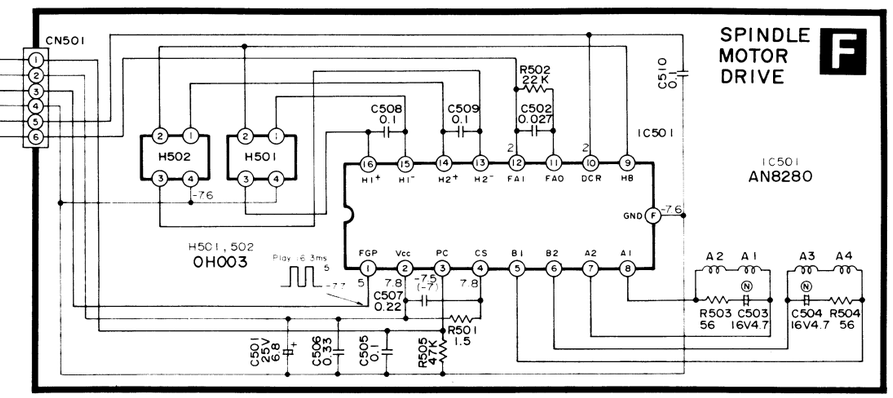
RF TJ701 GND TJ703

RELAY801 MUTING

LINE OUT CN801 L ch CN802 R ch



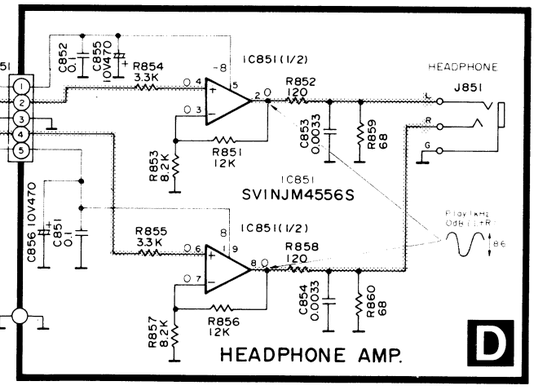



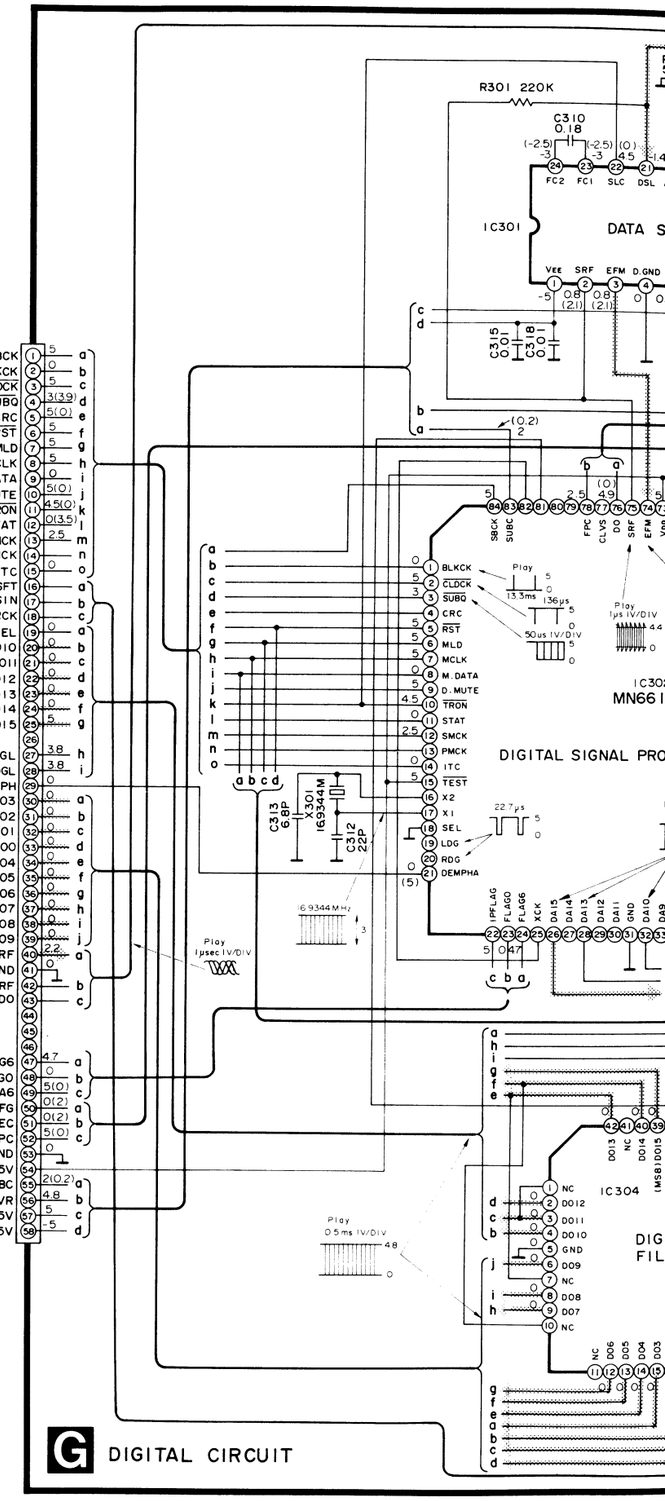




## * Caution !

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

* Cover the parts boxes made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.



28 29 30 31 32 33 34 35 36 37

A B C D E F

AC 120V
60Hz
For U.S.A. and
Canada

△C1 0.01

△S1
(POWER)

tricity.
by taking care during repair.
tics with aluminum foil.

able.
with the fingers directly.

F SPINDLE MOTOR DRIVE

IC501
AN8280

R503 56 C503 16V4.7
C504 16V4.7 R504 56

To B

G DIGITAL CIRCUIT

IC301
AN8371S
DATA SLICE AND PLL

IC302
MN6617F
DIGITAL SIGNAL PROCESSING

IC303
MN4416S
16K RAM

IC304
MN6618F
DIGITAL FILTER

• **Power supply circuit**

E

△T1

AC 220~240V
(50/60Hz)
For United Kingdom, Australia and continental Europe

F1 △T160mA △C1 0.01

△S1
(POWER)

E

△T1

(VOLTAGE SELECTOR)

△S2

AC110~127
/220~240V
(50/60Hz)
For others

△F2 T160mA

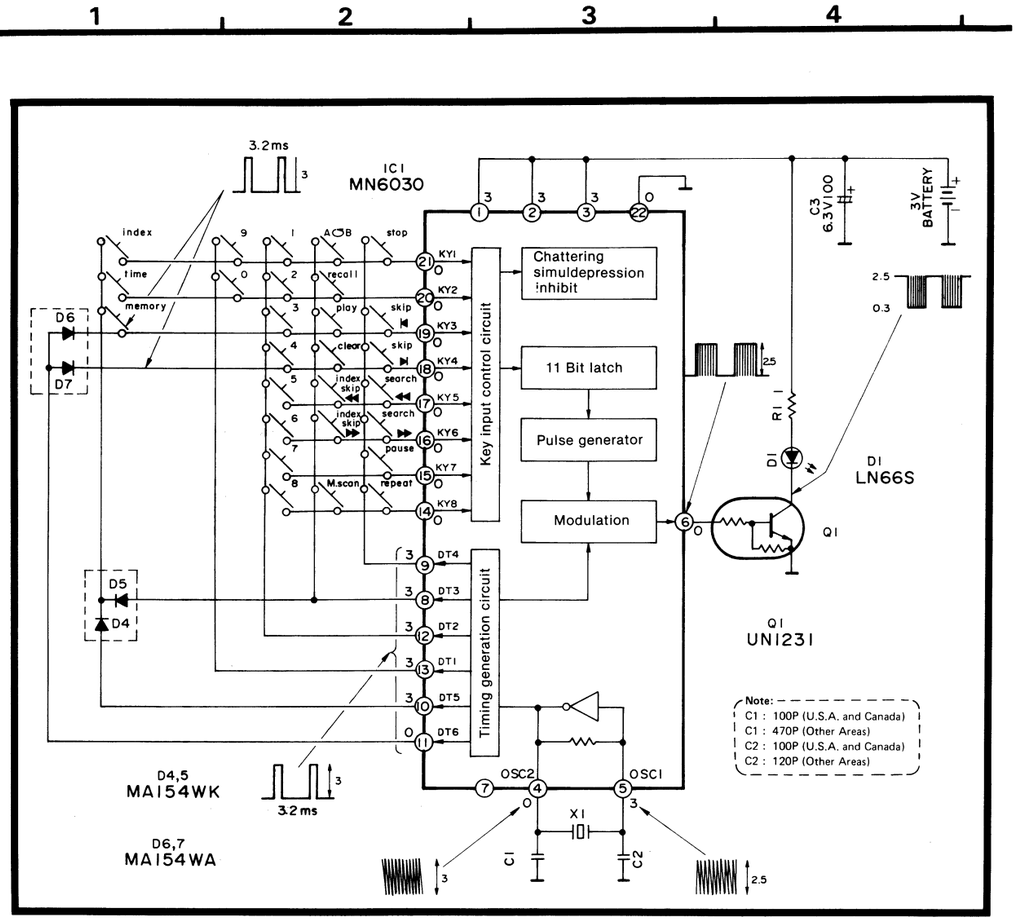
F1 T315mA C1 0.01

△S1
(POWER)

**Notes:**

1. **S1** : Power switch.
2. **S2** : Voltage selector switch.
   (For [XA], [XM], [PA], [PE] and [PC] areas.)
3. **S101** : Disc holder close detection switch.
4. **S102** : Disc holder open detection switch.
5. **S601** : Open/close switch.
6. **S602** : Stop/Clear switch.
7. **S604** : Repeat switch.
8. **S605** : Pause switch.
9. **S606** : Play switch.
10. **S607** : Backward search switch.
11. **S608** : Forward search switch.
12. **S609** : Time mode selector switch.
13. **S610** : Backward skip switch.
14. **S611** : Forward skip switch.
15. **S612** : A – B repeat switch.
16. **S616** : Memory switch.
17. **S623** : Auto space switch.
18. **S624** : Index switch.
19. The voltage value and waveform are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
    Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.
    * The parenthesized are the values of voltage generated during playing (Test disc 1 kHz, L + R, 0 dB), other are voltage values in stop mode.
20. Important safety notice:
    Components identified by △ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
21. ——— : Positive voltage lines and negative voltage lines.
    ▒▒▒ : Audio signal lines.

## ■ SCHEMATIC DIAGRAM (Remote Control Unit)




*** Caution !**

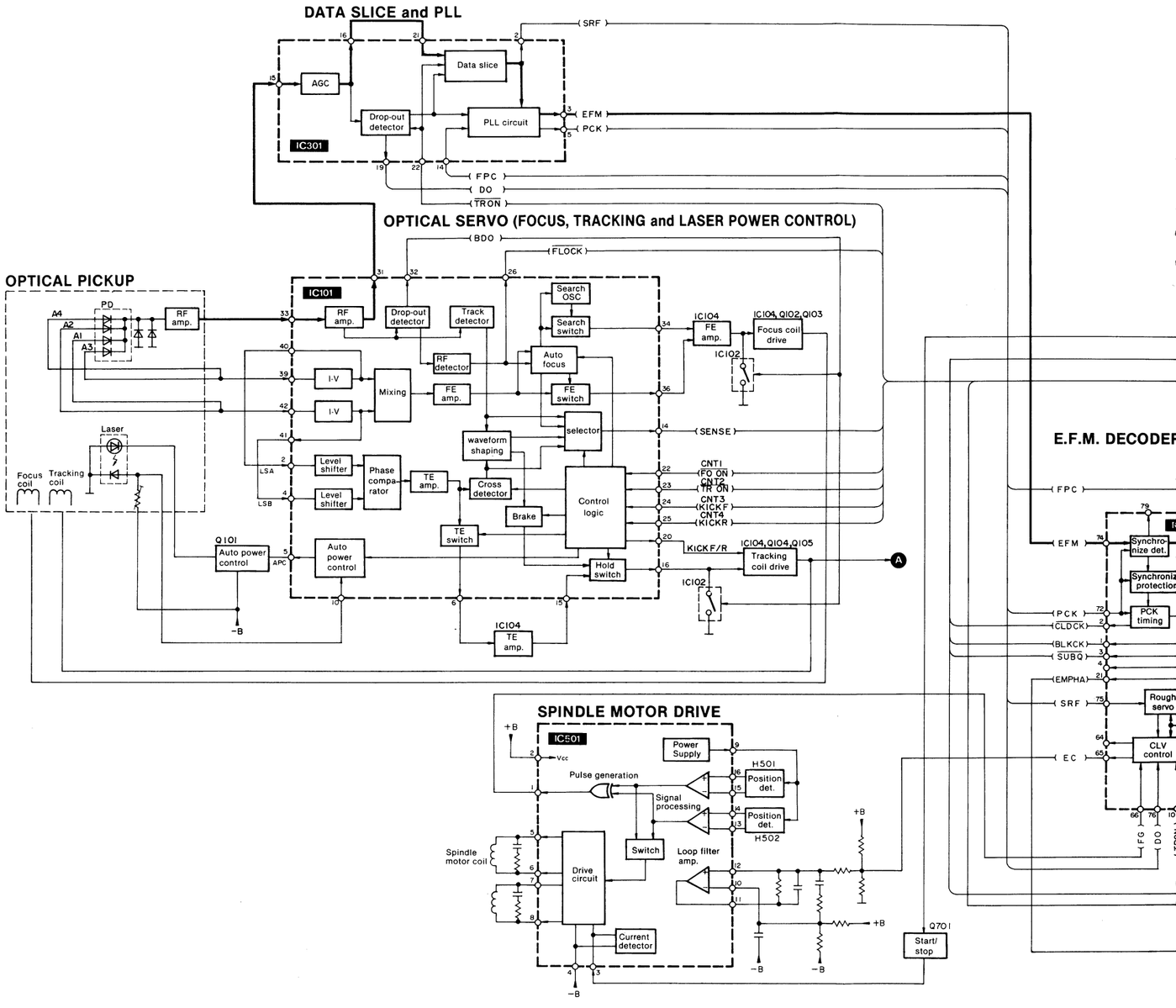
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

* Cover the parts boxes made of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.





## ■ BLOCK DIAGRAM



nd PLL

Data slice

PLL circuit

SRF

EFM

PCK

FPC

DO

TRON

TICAL SERVO (FOCUS, TRACKING and LASER POWER CONTROL)

BDO

FLOCK

Track detector

Search OSC

Search switch

RF detector

Auto focus

FE amp.

FE switch

IC104 FE amp.

IC104, Q102, Q103 Focus coil drive

IC102

waveform shaping

selector

SENSE

TE amp.

Cross detector

Brake

Control logic

CNT1 (FO ON)

CNT2 (TR ON)

CNT3 (KICKF)

CNT4 (KICKR)

TE switch

KICKF/R

IC104, Q104, Q105 Tracking coil drive

Hold switch

IC102

IC104 TE amp.

A

RESET SIGNAL GENERATOR

IC402

Reference voltage

Comparator

Level converter

Output

+B

SYSTEM CONTROL and FL DRIVE

IC401

SMCK

RST

BLKCK

SUBQ

CLDCK

CLOCK GEN.

ROM 6144 x 8

IR

PC

DISPLAY CONTROL

HALT/ STOP

SP

X SX SY SE

Y 320 x 4

BANK

SBT

SB

INT. FLAG

INT. EN. FLAG

CF ZF

ALU

LB

TC

TB

BC

SYSTEM CONTROL

E

A

DAC

KEY MATRIX

FLOCK

SENSE

CNT4

CNT3

CNT2

CNT1

TTON

MDATA

MCLK

MLD

D MUTE

STAT

MOTOR DRIVE

IC103

Logic

Q108, 109

Motor drive

Loading motor

IC202 Pickup position det.

TRAVERSE SERVO

IC201(1/2) Traverse servo

Q201

IC201(1/2) Differential amp.

Q202, 203 Rough search ON/OFF

+B

Speed detector

Speed

IC103

E.F.M. DECODER. ERROR CORRECTION and CLV SERVO

FPC

EFM

PCK

CLDCK

BLKCK

SUBQ

EMPHA

SRF

EC

IC302

Synchronize det.

Frequency detector

Synchronize protection

EFM decoder

PCK timing

Sub-code decoder

Syndrome

CCU

Working RAM

ALU

Compensation

16 bit serial data

DMUTE

Address

WE

OE

RST

Address generator

Rough servo

Severe servo

Processing

CLV control

MCK timing

Track counter

CPU interface

+B

FG

DO

TRON

SMCK

X301

16.9344 MHz

STAT

MDATA

MCLK

MLD

16K RAM

IC303

Row decoder

Memory array

Data control

Column I/O

Column decoder

Chip select, write enable, output enable

DIGITAL FILTER

IC304

Input resistor

RAM1 Address counter

RAM2 Address counter

RAM1

RAM2

Logic

Logic

Acquumlator

ROM

Overflow limitter

Output resistor

Timing generator

CPU interface

D/A CONVERTER

IC803

Ladder resistor network

I-V

Q801 Muting relay drive

DIGLITCH and AUDIO CIRCUIT

Diglitch IC804(1/2)

Switching

LPF

Buffer amp.

De-emphasis

IC801

IC802

IC804(1/2) Diglitch

SPINDLE MOTOR DRIVE

IC501

+B

Vcc

Power Supply

Pulse generation

Signal processing

H501 Position det.

H502 Position det.

Spindle motor coil

Drive circuit

Switch

Loop filter amp.

Current detector

-B

Q701 Start/ stop

## SYSTEM CONTROL and FL DRIVE

IC401
CLOCK GEN.
ROM 6144 x 8
IR
PC
HALT/ STOP
DISPLAY CONTROL
SP
X
Y
SX SY SE
320 x 4
BANK
SBT
SB
INT. FLAG
INT. EN. FLAG
CF ZF
ALU
LB
TC
TB
BC
SYSTEM CONTROL
E
A
DAC
SMCK
RST
BLKCK
SUBQ
CLDCK
FLOCK
SENSE
CNT4
CNT3
CNT2
CNT1
TTON
MDATA
MCLK
MLD
DMUTE
STAT
KEY MATRIX
Grid
Anode
F L

## REMOTE CONTROL DATA PROCESSING

IC601
CLOCK GEN.
ROM 1024 x 8
IR
PC (10)
HALT/ STOP
SP
Y (4)
X (4)
SX SY SE
96 x 4
LB
SBT
SB
INT.FLAG
INT.EN.FLAG
CF ZF
ALU
TC
TB
BC
SYSTEM CONTROL
E(4)
A(4)
SMCK
RST

## MOTOR DRIVE

IC103
Logic
Q108, 109
Motor drive
Loading motor
M
IC202
Pickup position det.

## TRAVERSE SERVO

IC201(1/2)
Traverse servo
Q201
Differential amp.
Q202,203
Rough search ON/OFF
+B
Speed detector
Speed det
IC103
IC102
Switch
Traverse coil drive
IC103,Q106,107
Traverse coil
IC602
Remote control reciver

## 16K RAM

IC303
Row decoder
Memory array
Data control
Column I/O
Column decoder
Chip select, write enable, output enable

## DIGITAL FILTER

IC304
Input resistor
RAM1 Address counter
RAM2 Addres counter
RAM1
RAM2
Logic
Overflow limitter
Output resistor
Acqum-lator
ROM
Timing generator
CPU interface
MDATA
MCLK
MLD

## D/A CONVERTER

IC803
Ladder resistor network
I-V

## DIGLITCH and AUDIO CIRCUIT

Q801
Muting relay drive
Diglitch
IC804(1/2)
Switching
LPF
Buffer amp.
De-emphasis
IC801
IC802
Muting relay
Lch
Rch
LINE OUT
IC851
Headphone amp.
Headphone

## POWER SUPPLY

FL601 AC 4.4V
IC401 -34V
Q13 Regulator
Power transformer (T1)
Power (S1)
AC Line
D1 Rectifier
D2 Rectifier
IC103,IC104 IC201, IC801,IC802 IC803,IC804 IC851
12V
IC1 Regulator
IC103,IC104 IC201,IC801 IC802,IC803 IC804,Q202 IC851
-12V
IC2 Regulator
Q102,Q104 Q106,Q108
11.4V
IC4 IC protector
IC501
7.8V
Q11 Regulator
IC101
5V
Q111 Regulator
IC202,IC301 IC302,IC303 IC401,IC402 IC601,Q801 Q601~603
5V
C11 Regulator
Q103,Q105 Q107,Q109
-11.4V
IC5 IC protector
IC501 Q701
-7.6V
Q12 Regulator
IC101 Q101 Laser
-5V
Q110 Regulator
IC202,301
-5V
IC12 Regulator

## REMOTE CONTROL TRANSMITTER

3V
Q1
LED drive
Modulation
Pulse generator
11 Bit latch
Chattering simuldepression inhibit
Timing generation circuit
Key input control circuit
IC1
3V
Key switch





Printed in Japan
851110500 Ⓗ TK/HY

ORDER NO. HAD8610745C0
A6

# Service Manual

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Compact Disc Player

## SL-P300

SL-P300

**Please use this manual together with the service manual for Model No. SL-P300, Order No. HAD8511289C0.**

## CORRECTION

## ■ MEASUREMENTS AND ADJUSTMENTS (on page 22)

### TURNTABLE HEIGHT ADJUSTMENT

1. Connect the oscilloscope to **TJ101** (+) and chassis (—) of servo P.C.B.
   **Oscilloscope setting :** VOLT . . . . . 100mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution :** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution :** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

### TURNTABLE HEIGHT ADJUSTMENT

1. Connect the oscilloscope to **TJ102** (+) and chassis (—) of servo P.C.B.
   **Oscilloscope setting :** VOLT . . . . . 100mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution :** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution :** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

Technics

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A6

# Service Manual

Compact Disc Player

## SL-P300

SL-P300

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

**Please use this manual together with the service manual for Model No. SL-P300, Order No. HAD8511289C0.**

**Notes:**

- The pin No. of IC's in TROUBLESHOOTING on page 26 were incorrect. Please refer to the diagram below for details.
- This supplement should be filed with the service manual for Model No. SL-P300, Order No. HAD8511289C0.

### INCORRECT

- **Check the focus servo**

Check the power supply circuit.
YES
Reset signal level is "H"? (IC402 ③)
YES
Clock is oscillated (4.2336MHz)? (IC302 ⑫)
YES
Focus ON signal level is "L"? (IC401 ㊱)
YES
Laser APC signal is ON?
IC101 ⑤ : H
Q101 ⓒ : L
YES
Focus search signal (triangular wave) is emitted? (IC101 ㉟)
YES
Focus lens moves up and down for a few seconds? (Not needed to set the disc)
YES
RF signal is emitted? (IC101 ㉛)
YES
RF detection signal (FLOCK) level is "L"? (IC101 ㉖)

### CORRECT

Check the power supply circuit.
YES
Reset signal level is "H"? (IC402 ①)
YES
Clock is oscillated (4.2336MHz)? (IC302 ⑫)
YES
Focus ON signal level is "L"? (IC401 ㉘)
YES
Laser APC signal is ON?
IC101 ⑤ : H
Q101 ⓒ : L
YES
Focus search signal (triangular wave) is emitted? (IC101 ㉟)
YES
Focus lens moves up and down for a few seconds? (Not needed to set the disc)
YES
RF signal is emitted? (IC101 ㉛)
YES
RF detection signal (FLOCK) level is "L"? (IC101 ㉖)

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Technics

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ORDER NO. HAD8511289C0-A

# ■ MESSUNGEN UND JUSTIERUNGEN Deutsch

- Die Justierung dieses Gerätes is grundsätzlich gleich wie für Modell SL-PJ11. (Die Justierpunkte sind teilweise verschieden.) Für nähere Einzelheiten dazu, siehe Service-Handbuch für Modell SL-PJ11 (Bestell-Nr. HAD 850926160).
- Es ist gefährlich, in den Laserstrahl zu sehen oder ihn zu berühren. (Laser-Strahlung ist unsichtbar.) Bei eingeschaltetem Gerät strahlt das Abtastsystem Laserstrahlung aus. Bei der Justierung ist dieser Punkt besonders zu beachten.

## ELEKTRISCHE JUSTIERUNG

PROVISORISCHE EINSTELLUNG JEDES DREHWIDERSTANDES

1. Die Gummikappe abnehmen.
2. Jeden Drehwiderstand der Servo-Platine wie gezeigt provisorisch einstellen.

FOKUS-VERSTÄRKUNGS-JUSTIERUNG

1. Den Niederfrequenz-Oszillator auf eine Frequenz von 750 Hz und eine Ausgangsspannung von 150 mVss einstellen und ihn an OSC und GND des Servo-Verstärkungs-Justierers anschließen.
2. CH1 und CH2 des Oszilloskops an TP1 und TP2 des Servo-Verstärkungs-Justierers anschließen. (TP3 an Masse)
   Einstellungen am Oszilloskop:
   VOLT ..... 100 mV (beide Kanäle)
   KIPP ..... 2 msec.
   EINGANG ..... Wechselstrom
3. Die Stromversorgung des Geräts einschalten.
4. Mit dem Schalter open/close den Testdisk (SZZP1014F) einlegen und auf Wiedergabe schalten.
5. Den Schaltknopf des Servo-Verstärkungsreglers (SZZP1017F) auf "2" → "3" und den on/off-Schalter auf "ON" stellen.
6. Wenn das Gerät auf Wiedergabe läuft und das 750Hz-Signal auf dem Oszilloskop angezeigt wird, VR 104 so einstellen, daß die Kurven und Amplitüden der beiden Kanäle wie in der Abbildung gezeigt gleich sind.
7. Die Stromversorgung des Geräts abschalten.

SPURLAGE-VERSTÄRKUNGS-JUSTIERUNG

1. Das Niederfrequenz-Oszilloskop auf eine Frequenz von 1,2 kHz und Ausgangsspannung von 150 mVss einstellen.
2. Die Oszilloskop-Anschlüsse wie oben vornehmen und die Einstellungen am Oszilloskop wie wie folgt vornehmen.
   Einstellungen am Oszilloskop:
   VOLT ..... 100 mV (beide Kanäle)
   KIPP ..... 0,5 msec.
   EINGANG ..... Gleichstrom
3. Die Stromversorgung des Geräts einschalten.
4. Mit dem open/close-Schalter den Testdisk (SZZP1014F) einlegen und das Gerät auf Wiedergabe stellen.
5. Den Schaltknopf des Servo-Verstärkungsreglers (SZZP1017F) auf "2" → "1" und den on/off-Schalter auf "ON" stellen.
6. Wenn das Gerät auf Wiedergabe steht und auf dem Oszilloskop das 1,2kHz-Signal dargestellt wird, muß VR 102 so eingestellt werden, daß die Kurven und Amplitüden auf beiden Kanalen wie in Abbildung gezeigt gleich sind.
7. Die Stromzufuhr zum Gerät abschalten.
8. Der Servo-Verstärkungs-Justierer wird für die weiteren Justierungen nicht gebraucht. Daher das Regelgerät entfernen und den Kurzschlußstecker von CN105 wieder in seiner ursprünglichen Position einsetzen.

BESTE AUGEN-(PD-BALANCE)-JUSTIERUNG

1. CH1 des Oszilloskopes an TJ701 (+) und TJ703 (-) der Hauptplatine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 200 mV
   KIPP ..... 0,5 µsec.
   EINGANG ..... Wechselstrom
2. Die Stromzufuhr einschalten und Band 13 (0,5 mm schwarzer Punkt) auf der Testplatte abspielen.
3. VR101 so justieren, daß das Augenmuster des HF-Signals am weitesten offen ist.

FOKUS-OFFSET-JUSTIERUNG

1. CH1 des Oszilloskops an TJ701 (+) und TJ703 (-) an die Hauptplatine anschließen.
   CH2 an TJ102 der Servo-Platine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 500 mV (CH1)
   100 mV (CH2)
   KIPP ..... 0,5 µsec.
   EINGANG ..... Wechselstrom (CH1)
   Gleichstrom (CH2)
   BETRIEBSART .. NORM (Schaltgriff auf CH1)
2. Band 13 (0,5mm großer schwarzer Punkt) auf der Testplatte abspielen.
3. So triggern, daß eine Wellenform wie gezeigt auf dem Oszilloskop erscheint, und VR 105 so justieren, daß die HF-Senkung von CH1 und die Wellenform-Amplitude von CH2 minimal werden.

SPURLAGE-OFFSET-JUSTIERUNG

1. CH1 des Oszilloskops ar TJ701 (+) und TJ703 (-) an die Hauptplatine anschließen.
   CH2 an TJ101 der Servo-Platine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 500 mV (CH1)
   100 mV (CH2)
   KIPP ..... 0,5 µsec.
   EINGANG ..... Wechselstrom (CH1)
   Gleichstrom (CH2)
   BETRIEBSART .. NORM (Schaltgriff auf CH1)
2. Band 13 (0,5mm großer schwarzer Punkt) auf der Testplatte abspielen.
3. So triggern, daß eine Wellenform wie gezeigt auf dem Oszilloskop erscheint, und VR 103 so justieren, daß die HF-Senkung von CH1 und die Wellenform-Amplitude von CH2 minimal werden.

PLL-JUSTIERUNG

1. CH1 des Oszilloskops an R809 (+) und Chassis (-) der Hauptplatine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 1 V
   KIPP ..... 1 msec
   EINGANG ....., Gleichstrom
2. Band 13 (0,5mm großer schwarzer Punkt) auf der Testplatte abspielen.
3. VR701 unter Beobachtung des Oszilloskops justieren und in die Mitte des Bereichs einstellen, wo die Wellenform stabil ist.

PRÜFUNG DES WIEDERGABEBETRIEBS NACH DER JUSTIERUNG

- Prüfung des Überspring-Suchlaufs

1. Eine gewöhnliche Platte abspielen.
2. Die Skip-Taste drücken, um den Überspring-Suchlauf zu prüfen. (Im Vorwärts- und Rückwärts-Betrieb prüfen.)

- Prüfung des manuellen Suchlaufs

1. Eine gewöhnliche Platte abspielen.
2. Die Taste für manuellen Suchlauf drücken und prüfen, ob glatter Suchlauf mit niedriger und hoher Geschwindigkeit möglich ist. (Im Vorwärts- und Rückwärts-Betrieb prüfen.

- Prüfen auf Defekte

1. Programm 13 der Testplatte abspielen und überprüfen, daß kein Tonausfall oder Rauschen auftritt. (Schwarzer Punkt)
2. Programm 14 der Testplatte abspielen und überprüfen, daß kein Tonausfall oder Rauschen auftritt. (Fingerabdruck)

## JUSTIERUNG DES OPTISCHEN ABTASTSYSTEMS

PROVISORISCHE EINSTELLUNG JEDES DREHWIDERSTANDES

1. Die Gummikappe abnehmen.
2. Jeden Drehwiderstand der Servo-Platine wie gezeigt provisorisch einstellen.

JUSTIERUNG DER PLATTENTELLERHÖHE

1. Das Oszilloskop an TJ101 (+) und Chassis (-) der Servo-Platine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 100 mV
   KIPP ..... 5 msec.
   EINGANG ..... Gleichstrom
2. Den Netzschalter einschalten und die Testplatte auflegen.
3. Die Gleichstrom-Nullbalance des Oszilloskops einstellen.
4. Die Testplatte abspielen.
5. Die Ladeeinheit während des Abspielens von Hand aufhalten.
   Vorsicht: Die Einheit horizontal und frei von Vibration halten.
6. Die Justierschraube so drehen, daß die Spannung in der Wellenformmitte des Oszilloskops OV beträgt.
   Vorsicht: Die Justierschraube nicht übermäßig drehen.
7. Nach erfolgter Justierung ist die Justierschraube mit Lack zu sichern.

MECHANISCHE JUSTIERUNG

1. Das Oszilloskop an TJ701 (+) und TJ703 (-) der Hauptplatine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 0,5 V
   KIPP ..... 0,5 µsec.
   EINGANG ..... Wechselstrom.
2. Den Netzschalter einschalten und die Testplatte auflegen.
3. Die Testplatte abspielen.
4. Das Gerät wie gezeigt aufstellen und die Ladeeinheit frei von Vibration halten.
5. Die Steckverbindungen (CN101 - 103) der Servo-Platine herausziehen.
6. Abwechselnd die beiden Justierschrauben des optischen Abtastsystems mit Sechskant-Schraubschlüssel (SZZP1044C) drehen, so daß das Augenmuster der Wellenform (HF-Signal am Oszilloskop am weitesten offen wird.
   Vorsicht:

1. Darauf achten, daß die flexible Platine des optischen Abtastsystems bei der Justierung nicht beschädigt wird.
2. Vor dem Installieren der Servo-Platine ist darauf zu achten, daß der Kondensator auf der Platine herabgelegt ist.

ELEKTRISCHE JUSTIERUNG

1. Die Ladeeinheit ins Chassis einpassen.
2. So vorgehen, wie im Abschnitt "Elektrische Justierung" vorstehend beschrieben.

# ■ MESURAGES ET REGLAGES — Français

- Le réglage de cet appareil est, dans son principe, le même que pour le SL-PJ11. (Les points de réglage ne sont que partiellement différents.) Pour les détails, se référer au Manuel de Service du SL-PJ11 (N° d'ordre HAD 850926160).
- Il est très dangereux de regarder ou de toucher le faisceau à laser. (Le rayonnement du laser est invisible.) Avec l'appareil mis "en marche" le rayonnement du laser est émis de la lentille du lecteur de disques. Prendre particulièrement garde pendant les mises au point.

## MISES AU POINT ELECTRIQUES

REGLAGE TEMPORAIRE DE CHAQUE RESISTANCE VARIABLE

1. Retirer le capuchon en caoutchouc.
2. Régler temporairement chaque résistance variable de la plaquette à circuits imprimés d'asservissement, comme il ést montre.

REGLAGE DE L'AMPLIFICATION DE FOCALISATION

1. Régler l'oscillateur à basse fréquence sur une fréquence de 750 Hz et une tension de sortie de 150 mV crête-à-crête, et le raccorder à "OSC" (oscillateur) et "GND" (terre) de l'ajusteur d'amplification servomécanique.
2. Raccorder le canal 1 et le canal 2 de l'oscilloscope à TP1 et TP2 de l'ajusteur d'amplification servomécanique. (TP3 relié à la terre.)
   Réglage de l'oscilloscope: TENSION ..... 100 mV (les deux canaux)
   BALAYAGE ..... 2 msec.
   ENTREE ..... C.A.
3. Mettre en marche l'interrupteur d'alimentation du lecteur.
4. Installer le disque d'essai (SZZP1014F) dans le dispositif de support pour disque en utilisant la touche d'ouverture/fermeture et régler sur le mode de lecture.
5. Régler le commutateur rotatif de l'ajusteur d'amplification asservie (SZZP1017F) sur "2" → "3" et le commutateur de marche/arrêt sur la position "ON" (marche).
6. Régler le lecteur sur le mode d'audition et le signal de 750 Hz sera affiché sur l'oscilloscope. Puis, régler VR104 de telle sorte que les formes d'ondes et les amplitudes des deux canaux deviennent égales, comme il est montré à la figure.
7. Mettre hors circuit l'interrupteur d'alimentation en courant du lecteur.

REGLAGE DE L'AMPLIFICATION D'ALIGNEMENT

1. Régler l'oscilloscope à basse fréquence sur une fréquence de 1,2 kHz et une tension de 150 mV crête-à-crête.
2. Changer le réglage de l'oscilloscope en effectuant le même raccordement de l'oscilloscope que celui mentionné ci-dessus.
   Réglage de l'oscilloscope: TENSION ..... 100 mV (les deux canaux)
   BALAYAGE ..... 0.5 msec.
   ENTREE ..... C.C.
3. Mettre en marche l'interrupteur d'alimentation du lecteur.
4. Installer le disque d'essai (SZZP1014F) dans le dispositif de support pour disque en utilisant la touche d'ouverture/fermeture et régler sur le mode de lecture.
5. Régler le commutateur rotatif de l'ajusteur d'amplification asservie (SZZP1017F) sur "2" → "1" et le commutateur de marche/arrêt sur la position "ON" (marche).
6. Régler le lecteur sur le mode d'audition et le signal de 1,2 kHz sera indiqué sur l'oscilloscope. Puis, régler VR102 de telle sorte que les formes d'ondes et les amplitudes des deux canaux soient égales, comme il est montré à la figure.
7. Mettre hors circuit l'interrupteur d'alimentation du lecteur.
8. L'ajusteur d'amplification servomécanique n'est pas nécessaire pour les autres réglages. Aussi, débrancher le contrôleur et insérer le connecteur de court-circuitage CN105 à sa position initiale.

REGLAGE VISUEL LE MEILLEUR (EQUILIBRAGE DU DETECTEUR OPTIQUE)

1. Raccorder le canal 1 de l'oscilloscope à TJ701 (+) et à TJ703 (-) de la plaquette à circuits imprimés principale.
   Réglage de l'oscilloscope: TENSION ..... 200 mV
   BALAYAGE ..... 0.5 µsec.
   ENTREE ..... C.A.
2. Mettre en marche l'interrupteur d'alimentation et faire jouer la plage 13 (zone d'interférence de 0,5 mm) du disque d'essai.
3. Régler VR101 de telle sorte que l'oscillogramme visuel du signal de haute fréquence soit le plus largement ouvert possible.

REGLAGE DU DECENTREMENT DE FOCALISATION

1. Raccorder le canal 1 de l'oscilloscope à TJ701 (+) et à TJ703 (-) de la plaquette à circuits imprimés principale. Raccorder le canal 2 à TJ102 de la plaquette à circuits imprimés d'asservissement.
   Réglage de l'oscilloscope: TENSION ..... 500 mV (canal 1)
   100 mV (canal 2)
   BALAYAGE ..... 0.5 µsec.
   ENTREE ..... C.A. (canal 1)
   C.C. (canal 2)
   MODE ..... NORM (Déclencheur sur la canal 1)
2. Faire jouer la plage 13 (zone d'interférence de 0,5 mm) du disque d'essai.
3. Déclencher de telle sorte que la forme d'onde, telle qu'elle est montrée, apparaisse sur l'oscilloscope, et régler VR105 pour réduire au minimum l'abaissement de haute fréquence sur le canal 1 et l'amplitude de l'onde sur le canal 2.

REGLAGE DU DECENTREMENT D'ALIGNEMENT

1. Raccorder le canal 1 del l'oscilloscope à TJ701 (+) et à TJ703 (-) de la plaquette à circuits imprimés principale. Raccorder le canal 2 à TJ101 de la plaquette à circuits imprimés d'asservissement.
   Réglage de l'oscilloscope: TENSION ..... 500 mV (canal 1)
   100 mV (canal 2)
   BALAYAGE ..... 0.5 µsec.
   ENTREE ..... C.A. (canal 1)
   C.C. (canal 2)
   MODE ..... NORM (Déclencheur sur la canal 1)
2. Faire jouer la plage 13 (zone d'interférence de 0,5 mm) du disque d'essai.
3. Déclencher de telle sorte que la forme d'onde, telle qu'elle est montrée, apparaisse sur l'oscilloscope, et régler VR103 pour réduire au minimum l'abaissement de haute fréquence sur le canal 1 et l'amplitude de l'onde sur le canal 2.

REGLAGE DU CIRCUIT D'ASSERVISSEMENT DE PHASE

1. Raccorder le canal 1 de l'oscilloscope à R809 (+) et au châssis (-) de la plaquette à circuits imprimés principale.
   Réglage de l'oscilloscope: TENSION ..... 1V
   BALAYAGE ..... 1 msec.
   ENTREE ..... C.C.
2. Faire jouer la plage 13 (zone d'interférence de 0,5 mm) du disque d'essai.
3. Ajuster VR701 tout en observant l'oscilloscope et le régler au milieu de la plage à l'endroit où la forme d'onde est stable.

VERIFICATION DU FONCTIONNEMENT DE L'AUDITION APRES LE REGLAGE

- Vérification de la recherche par sauts.

1. Faire jouer un disque normal.
2. Appuyer sur la touche de saut pour vérifier la recherche par sauts. (A la fois sur les modes de l'avant et de l'arrière.)

- Vérification de la recherche manuelle

1. Faire jouer un disque normal.
2. Appuyer sur la touche de recherche manuelle pour vérifier que la recherche manuelle peut être effectuée facilement et à des vitesses faibles et élevées. (A la fois sur les modes de l'avant et de l'arrière.)

- Vérification pour des défauts

1. Faire jouer la plage 13 du disque d'essai pour vérifier qu'il n'y ait pas de parasites ou d'omission du son. (Zone d'interférence)
2. Faire jouer la plage 14 du disque d'essai pour vérifier qu'il n'y ait pas de parasites ou d'omission du son. (Marque de doigts)

## REGLAGE DU LECTEUR DE DISQUES OPTIQUE

REGLAGE TEMPORAIRE DE CHAQUE RESITANCE VARIABLE

1. Retirer le capuchon en caoutchouc.
2. Régler temporairement chaque résistance variable de la plaquette à circuits imprimés d'asservissement, comme il est montré.

REGLAGE DE LA HAUTEUR DE LA PLATINE

1. Raccorder l'oscilloscope à TJ101 (+) et au châssis (-) de la plaquette à circuits imprimés d'asservissement.
   Réglage de l'oscilloscope: TENSION ..... 100 mV
   BALAYAGE ..... 5 msec.
   ENTREE ..... C.C.
2. Mettre en marche l'interrupteur d'alimentation et installer le disque d'essai.
3. Régler sur l'oscilloscope pour un équilibrage sur zéro C.C.
4. Faire jouer le disque d'essai.
5. Soutenir le dispositif de chargement à la main pendant l'audition.
   Avertissement: Tenir horizontalement l'appareil sans lui donner de secousses.
6. Tourner la vis de réglage de telle sorte que la tension au centre de la forme d'onde de l'oscilloscope soit de 0V.
   Avertissement: Ne pas tourner excessivement la vis de réglage.
7. Après le réglage, appliquer un agglutinant pour blocage de vis à la vis de réglage.

REGLAGE MECANIQUE

1. Raccorder l'oscilloscope à TJ701 (+) et à TJ703 (-) de la plaquette à circuits imprimés principale.
   Réglage de l'oscilloscope: TENSION ..... 0.5 V
   BALAYAGE ..... 0.5 μsec.
   ENTREE ..... C.A.
2. Mettre en marche l'interrupteur d'alimentation et installer le disque d'essai.
3. Faire jouer le disque d'essai.
4. Installer l'appareil comme il est montré, en prenant garde de ne pas donner de secousses au dispositif de chargement.
5. Retirer les connecteurs (CN101 - 103) de la plaquette à circuits imprimés d'asservissement

6. Tourner alternativement les vis de réglage (2 pièces) du lecteur de disques optique avec une clé hexagonale (SZZP1044C) de telle sorte que l'oscillogramme visuel de la forme d'onde (signal de haute fréquence) de l'oscilloscope soit le plus largement ouvert possible.

Avertissements:
1. Prendre garde de ne pas endommager le support flexible du lecteur de disques optique pendant le réglage.
2. Avant d'installer la plaquette à circuits imprimés d'asservissement, s'assurer que le condensateur sur le support soit déposé.

REGLAGE ELECTRIQUE
1. Installer le dispositif de chargement au châssis.
2. Suivre la procédure des "Mises au point électriques" mentionneé précédemment.

## ■ MEDICIONES Y AJUSTES — Español

- El ajuste de esta unidad es básicamente el mismo que para SL-PJ11. (Los puntos de ajuste son parcialmente diferentes,)
  Para detalles, referir al Manual de Servicio de SL-PJ11 (No. de Pedido HAD 850926160).
- Es muy peligroso mirar o tocar el haz de laser. (La radiación de laser es invisible.) Con la unidad prendida, la radiación de laser es emitida desde la lente captadora. Tener cuidado durante los ajustes en particular.

### AJUSTE ELECTRICO

PUESTA TEMPORAL DE CADA VR
1. Remover la cubierta de goma.
2. Temporalmente ajustar cada VR de P.C.B. (tablero de circuitos impresos) servo como se muestra.

AJUSTE DE GANANCIA DE ENFOQUE
1. Ajustar el oscilador de baja frecuendia a frecuencia de 750 Hz y voltaje de salida de 150 mVp-p, y conectarlo a OSC y GND (tierra) de ajustador de servoganancia.
2. Conectar CH1 y CH2 del osciloscopio a TP1 y TP2 del ajustador de servoganancia. (TP3 puesto a tierra)
   Puesta de osciloscopio: VOLT ..... 100 mV (ambos canales)
   BARRIDO ..... 2 mseg.
   ENTRADA ..... CA
3. Encender el interruptor de la fuente de energia del tocadiscos.
4. Poner la disqueta de prueba (SZZP1014F) en su soporte con la llave de abierto/cerrado y en el modo de audición.
5. Fijar el interruptor rotativo del ajustador de ganancia de servo (SZZP1017F) en "2" → "3" y en posición "ENCENDIDO".
6. En el osciloscopio se mostrarán el modo de audición del tocadiscos y la señal de 750 Hz, después de lo cual hay que ajustar VR 104 de manera que las formas de onda y las amplitudes de ambos canales sean iguales a las que se muestran en la figura.
7. Apagar el interruptor de la fuente de anergia del tocadiscos.



AJUSTE DE GANANCIA DE SEGUIMIENTO
1. Ajustar el osciloscopio de baja frecuencia a frecuencia de 1,2 kHz y voltaje de salida de 150 mVp-p.
2. Cambiar la puesta de osciloscopio, haciendo la conexión del osciloscopio la misma que la mencionada arriba.
   Puesta de osciloscopio: VOLT ..... 100 mV (ambos canales)
   BARRIDO ..... 0,5 mseg.
   ENTRADA ..... CC
3. Encender el interruptor de fuente de energia del tocadiscos.
4. Poner la disqueta de prueba (SZZP1014F) en su soporte por medio de la llave de abierto/cerrado y en el modo de audición.
5. Fijar el interruptor rotativo del ajustador de ganancia de servo (SZZP1017F) en "2" → "1" y el interruptor de encendido/apagado en la posición de "Encendido".
6. En el osciloscopio se mostrarán el modo de audición del tocadiscos y la señal de 1,2kHz, des-pués de lo cual hay gue ajustar VR102 de manera gue la formas de onda y las amplitudes de ambos canales sean iguales a las que se muestran en la figura.
7. Apagar el interruptor de fuente de energia del tocadiscos.
8. El ajustador de servoganancia no es necesario para otros ajustes. Por lo tanto, desconectar el controlador e insertar el conector corto de CN105 a la posición original.

AJUSTE DE OJO OPTIMO (EQUILIBRIO DE PD (diferencia de potencia) )
1. Conectar CH1 del osciloscopio a TJ701 (+) y TJ703 (-) del P.C.B. principal.
   Puesta de osciloscopio: VOLT ..... 200 mV
   BARRIDO ..... 0,5 μseg.
   ENTRADA ..... CA
2. Prender la fuente de alimentación y hacer funcionar la banda 13 (punto negro de 0,5 mm) del disco de prueba.
3. Ajustar VR 101 de manera que el patrón de ojo de señal RF sea lo más ampliamente abierto.

AJUSTE DE DESVIACION DE ENFOQUE
1. Conectar CH1 del osciloscopio a TJ701 (+) y TJ703 (-) al P.C.B. principal.
   Conectar CH2 a TJ102 de P.C.B. servo.
   Puesta de osciloscopio: VOLT ..... 500 mV (CH1)
   100 mV (CH2)
   BARRIDO .... 0,5 μseg.
   ENTRADA .... CA (CH1)
   CC (CH2)
   MODALIDAD .. NORM (Disparar en CH1)
2. Hacer funcionar la banda 13 (punto negro de 0,5 mm) de disco de prueba.
3. Disparar de manera que la forma de onda, como mostrada, aparezca en el osciloscopio, y ajustar VR105 para minimizar la depresión de RF en CH1 y la amplitud de onda en CH2.

AJUSTE DE DESVIACION DE SEGUIMIENTO
1. Conectar CH1 del osciloscopio a TJ701 (+) y TJ703 (-) al P.C.B. principal. Conectar CH2 a TJ101 de P.C.B. servo.

Puesta de osciloscopio: VOLT ..... 500 mV (CH1)
100 mV (CH2)
BARRIDO ..... 0,5 μseg.
ENTRADA ..... CA (CH1)
CC (CH2)
MODALIDAD .... NORM (Disparar en CH1)

2. Hacer funcionar la banda 13 (punto negro de 0,5 mm) de disco de prueba.
3. Disparar de manera que la forma de onda, como mostrada, aparezca en el osciloscopio, y ajustar VR103 para minimizar la depresión de RF en CH1 y la amplitud de onda en CH2.

AJUSTE DE PLL (bucle de enganche de fase)

1. Conectar CH1 del osciloscopio a R809 (+) y chasis (-) del P.C.B. principal.
   Puesta de osciloscopio: VOLT ..... 1V
   BARRIDO ..... 1 mseg.
   ENTRADA ..... CC
2. Hacer funcionar la banda 13 (punto negro de 0,5 mm) del disco de prueba.
3. Ajustar VR701, mientras observa el osciloscopio, y ponerlo en el medio de la gama donde la forma de onda es estable.

COMPROBACION DE OPERACION DE FUNCION DESPUES DEL AJUSTE

- Comprobación de exploración de salto

1. Tocar un disco ordinario.
2. Apretar el botón de salto para comprobar la exploración de salto. (Tanto en la modalidad directa como en la inversa).

- Comprobación de exploración manual

1. Tocar un disco ordinario.
2. Apretar el botón de exploración manual para comprobar que la exploración manual se puede hacer suavemente a velocidades bajas y altas. (Tanto en la modalidad directa como en la inversa).

- Comprobación por defecto.

1. Hacer funcionar la banda 13 del disco de prueba para comprobar que no hay salto de sonido o ruido. (Punto negro)
2. Hacer funcionar la banda 14 del disco de prueba para comprobar que no hay salto de sonido o ruido. (Huella digital)

## AJUSTE DE TOMA OPTICA

PUESTA TEMPORAL DE CADA VR

1. Remover la cubierta de goma.
2. Temporalmente ajustar cada VR del P.C.B. servo como se muestra.

AJUSTE DE ALTURA DE PLATO GIRADISCOS

1. Conectar el osciloscopio a TJ101 (+) y chasis (-) de P.C.B. servo.
   Puesta de osciloscopio: VOLT ..... 100 mV
   BARRIDO ..... 5 mseg.
   ENTRADA ..... CC
2. Prender el interruptor de alimentación y montar el disco de prueba.
3. Ajustar el equilibrio cero de CC de osciloscopio.
4. Tocar el disco de prueba.
5. Levantar la unidad de carga con la mano durante la función.
   Precaución: Tener la unidad horizontalmente sin hacerla vibrar.
6. Girar el tornillo de ajuste de manera que el voltaje en el centro de forma de onda sea 0V. Precaución: No girar el tornillo de ajuste excesivamente.
7. Después del ajuste, aplicar adherencia de cierre de tornillo al tornillo de ajuste.



AJUSTE MECANICO

1. Conectar el osciloscopio a TJ701 (+) y TJ703 (-) al P.C.B. principal.
   Puesta de osciloscopio: VOLT ..... 0,5 V
   BARRIDO ..... 0,5 useg.
   ENTRADA ..... CA
2. Prender el interruptor de alimentación y montar el disco de prueba.
3. Tocar el disco de prueba.
4. Poner la unidad, como se muestra, con cuidado de no hacer vibrar la unidad de carga.
5. Sacar los conectores (CN101 - 103) del P.C.B. servo.
6. Alternativamente girar los tornillos de ajuste de toma óptica (2 pzas.) con llave hexagonal (SZZP1044C) de manera que el patrón de ojo de la forma de onda (señal RF) del osciloscopio esté abierto lo más posible.

Precauciones:

1. Tener cuidado de no dañar el tablero flexible de toma óptica durante el ajuste.
2. Antes de instalar el P.C.B. servo, asegurarse de que el condensador en el tablero está recostado.

AJUSTE ELECTRICO

1. Instalar la unidad de carga al chasis.
2. Seguir el procedimiento de "Ajuste eléctrico" mencionado más arriba.



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A6

# Service Manual

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Compact Disc Player

## SL-P300

SL-P300

**Please use this manual together with the service manual for Model No. SL-P300, Order No. HAD8511289C0.**

## CORRECTION

## ■ MEASUREMENTS AND ADJUSTMENTS (on page 22)

### TURNTABLE HEIGHT ADJUSTMENT

1. Connect the oscilloscope to **TJ101** (+) and chassis (−) of servo P.C.B.
   **Oscilloscope setting :** VOLT . . . . . 100mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution :** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution :** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

### TURNTABLE HEIGHT ADJUSTMENT

1. Connect the oscilloscope to **TJ102** (+) and chassis (−) of servo P.C.B.
   **Oscilloscope setting :** VOLT . . . . . 100mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution :** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution :** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

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# Service Manual

Compact Disc Player

# SL-P300

Supplement

COMPACT disc DIGITAL AUDIO

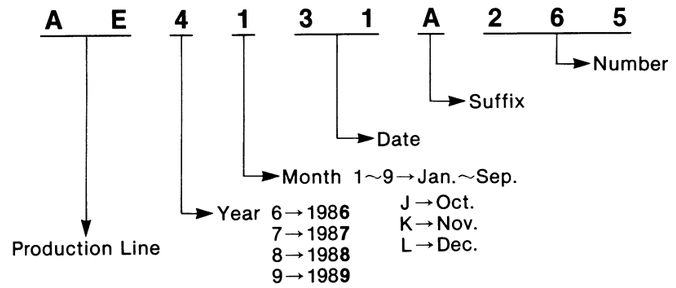
DIGITAL

Please file and use this supplement manual together with the service manual for Model No. SL-P300, Order No. HAD8511289C0.

**Note:**

- This supplement has been issued to inform you that the optical servo P.C.B. has been changed in units having serial number suffixes "G" or later. (Refer to "How to read the serial number" shown below).

## ● How to read the serial number




## ■ REPLACEMENT PARTS LIST

| Ref. No. | Change of Part No. OLD | NEW | Description | Remarks |
|---|---|---|---|---|
| VARIABLE RESISTOR | | | | |
| VR106 | —— | **EVND1AA00B53** | Tracking Balance Adj., 5KΩ (B) | Addition |
| RESISTORS | | | | |
| R112 | ERDS2TJ683 | **ERDS2TJ473** | Carbon, 1/4W, 47KΩ, ±5% | Change |
| R113 | ERDS2TJ104 | **ERDS2TJ154** | Carbon, 1/4W, 150KΩ, ±5% | Change |
| R114 | ERDS2TJ474 | **ERDS2TJ824** | Carbon, 1/4W, 820KΩ, ±5% | Change |
| R119 | ERDS2TJ222 | **ERDS2TJ152** | Carbon, 1/4W, 1.5KΩ, ±5% | Change |
| R191, 192 | —— | **ERDS2TJ102** | Carbon, 1/4W, 1KΩ, ±5% | Addition |
| CAPACITORS | | | | |
| C117 | RCBS1H681KBY | —— | Ceramic, 50V, 680pF, ±10% | Deletion |
| C118 | ECQM1H103JZ | —— | Polyester, 50V, 0.01μF, ±5% | Deletion |
| C126 | RCBS1H220JLY | **RCBS1H101KBY** | Ceramic, 50V, 100pF, ±10% | Change |
| C148 | ECKD1H102KB | **RCBS1H102KBY** | Ceramic, 50V, 0.001μF, ±5% | Change |
| C191, 192 | —— | **RCBS1H820KBY** | Ceramic, 50V, 82pF, ±10% | Addition |
| C193, 194 | —— | **RCBS1H102KBY** | Ceramic, 50V, 0.001μF, ±5% | Addition |

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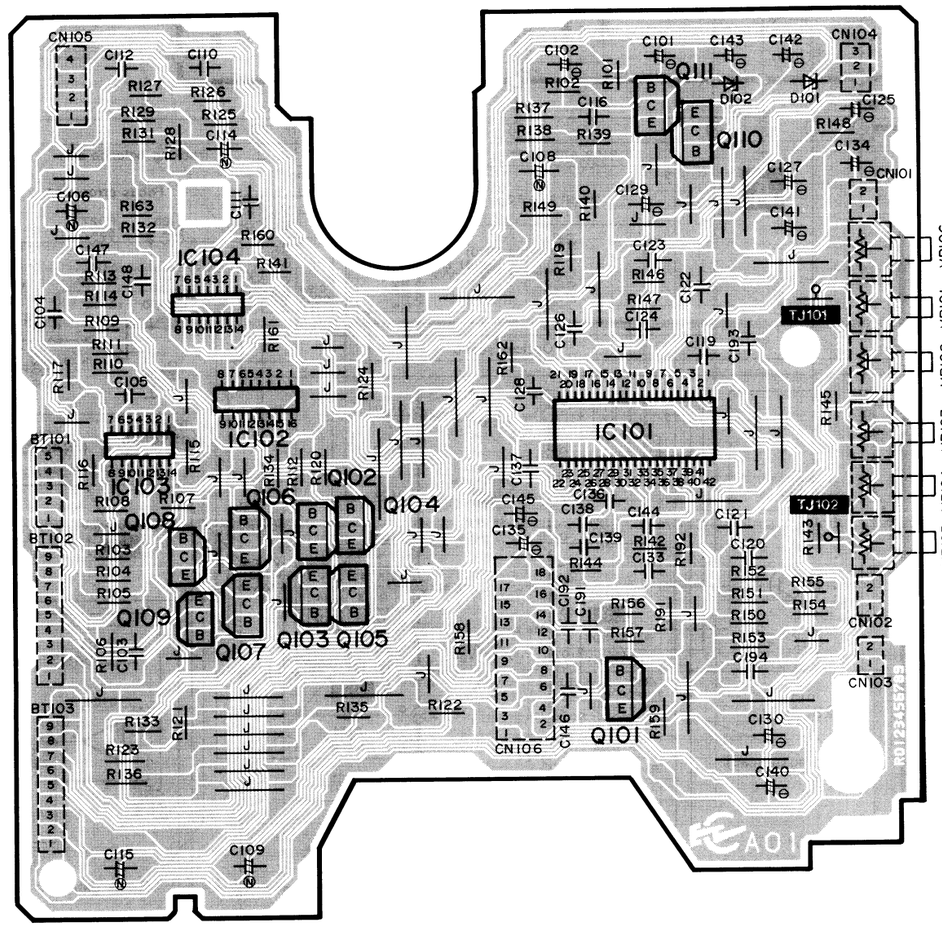
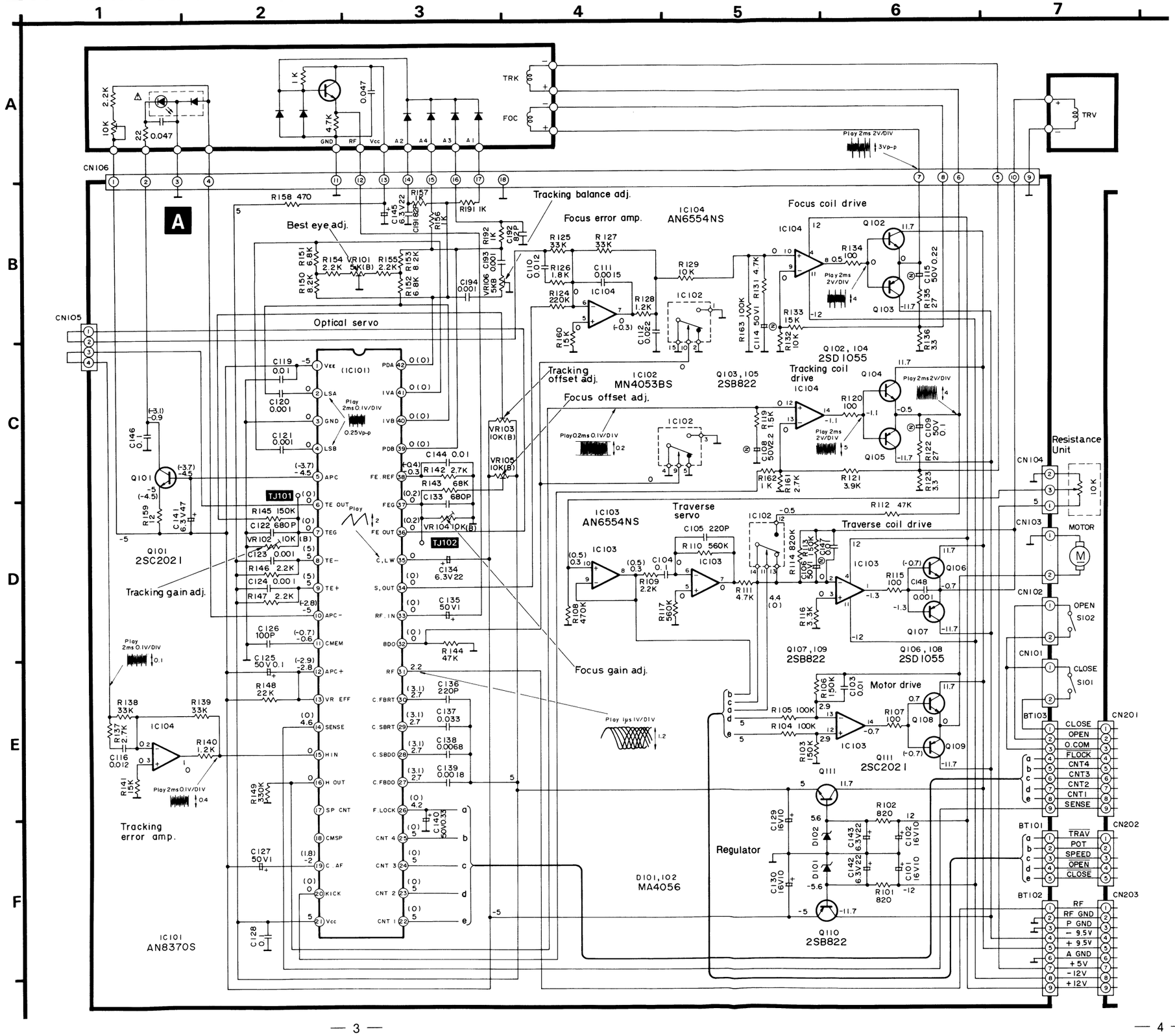
**SL-P300**

## ■ PRINTED CIRCUIT BOARD

### A (Optical servo P.C.B.)



## ■ SCHEMATIC DIAGRAM (Optical servo circuit)



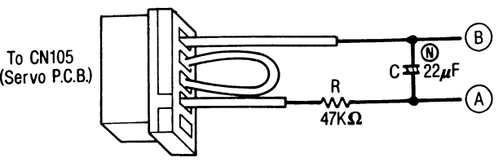

## ■ MEASUREMENTS AND ADJUSTMENTS

**• Addition of tracking balance adjustment**

### TRACKING BALANCE ADJUSTMENT

**Note: This adjustment must be done after all previous electrical adjustments have been done. (VR101, VR102, VR103, VR104 and VR105)**

1. Remove the shorting connector from connector CN105 of the servo P.C.B. and connect the **test fixture** for tracking balance adjustment (**SZZP1053F**), to it.
2. Turn **ON** the power switch of the player and insert a test disc (**SZZP1014F** or **SZZP1054C**).
3. Set the player to the play mode and play **track No. 1**.
4. Connect CH-1 of the oscilloscope to point Ⓐ (+) and point Ⓑ (−) of the test fixture as shown in **Fig. A**.
   **Oscilloscope setting:** VOLT..... 20mV
   SWEEP..... 1msec.
   INPUT..... DC
5. Adjust **VR106** so that the DC voltage is **0±5mV** as shown in **Fig. B**.
6. Disconnect the test fixture, and reinsert the shorting connector to **CN105**.




Test fixture (SZZP1053F)

**Fig. A**

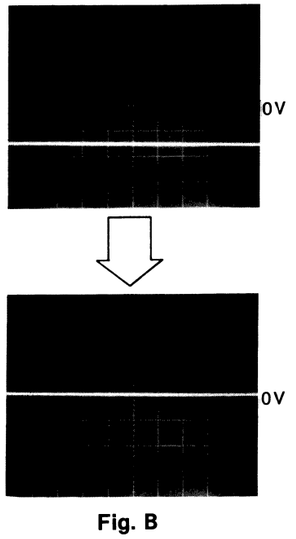



**Fig. B**





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# Service Manual

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Compact Disc Player

## SL-P300



**Please use this manual together with the service manual for Model No. SL-P300, Order No. HAD8511289C0.**

## CORRECTION

## ■ MEASUREMENTS AND ADJUSTMENTS (on page 22)

### TURNTABLE HEIGHT ADJUSTMENT

1. Connect the oscilloscope to **TJ101** (+) and chassis (–) of servo P.C.B.
   **Oscilloscope setting :** VOLT . . . . . 100mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution :** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution :** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

### TURNTABLE HEIGHT ADJUSTMENT

1. Connect the oscilloscope to **TJ102** (+) and chassis (–) of servo P.C.B.
   **Oscilloscope setting :** VOLT . . . . . 100mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution :** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution :** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

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# Service Manual

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COMPACT disc DIGITAL AUDIO

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Compact Disc Player

## SL-P300



**Please use this manual together with the service manual for Model No. SL-P300, Order No. HAD8511289C0.**

## CORRECTION

## ■ MEASUREMENTS AND ADJUSTMENTS (on page 22)

### TURNTABLE HEIGHT ADJUSTMENT

1. Connect the oscilloscope to **TJ101** (+) and chassis (–) of servo P.C.B.
   **Oscilloscope setting :** VOLT . . . . . 100mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution :** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution :** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

### TURNTABLE HEIGHT ADJUSTMENT

1. Connect the oscilloscope to **TJ102** (+) and chassis (–) of servo P.C.B.
   **Oscilloscope setting :** VOLT . . . . . 100mV
   SWEEP . . . . . 5 msec.
   INPUT . . . . . DC
2. Turn on the power switch and mount the test disc.
3. Set the DC zero balance of oscilloscope.
4. Play the test disc.
5. Hold up the loading unit by hand during play.
   **Caution :** Hold the unit horizontally without giving it vibrations.
6. Turn the adjusting screw so that the voltage at the waveform center of the oscilloscope is **0V**.
   **Caution :** Do not turn the adjusting screw excessively.
7. After the adjustment, apply screw-lock bond to the adjusting screw.

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# Service Manual

Supplement

COMPACT disc DIGITAL AUDIO

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Compact Disc Player

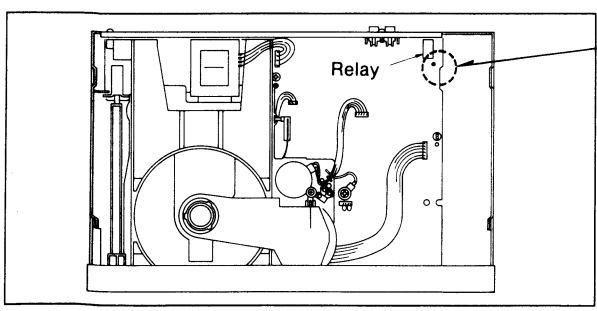
# SL-P310

SL-P310

**Please use this manual together with the service manual for Model No. SL-P310, Order No. HAD8607667C0.**

**Notes:**
- ★ The muting circuit relay was changed partway through production from a 6V drive relay to a 12V drive relay.
- ★ This unit is manufactured to use either relay.
- ★ When exchanging the relay during servicing, take particular care to follow the instructions below describing how to distinguish between the two relays.
- ★ This supplement should be filed with the service manual for Model No. SL-P310. (Order No. HAD8607667C0.)

## ■ HOW TO DISTINGUISH BETWEEN THE 6V DRIVE RELAY AND 12V DRIVE RELAY



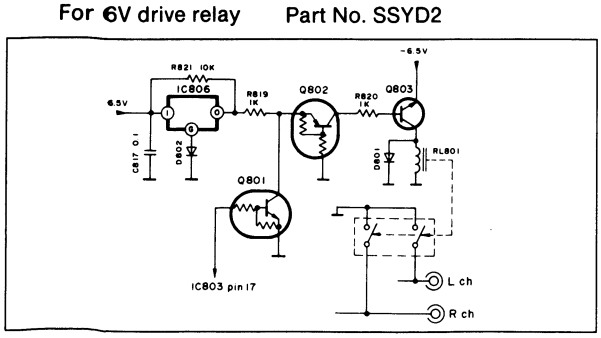

(Upper view of unit after removal of top case)

Units with a red mark near the lower side of the relay were manufactured using a 12V drive relay (Part No. SSYD3)

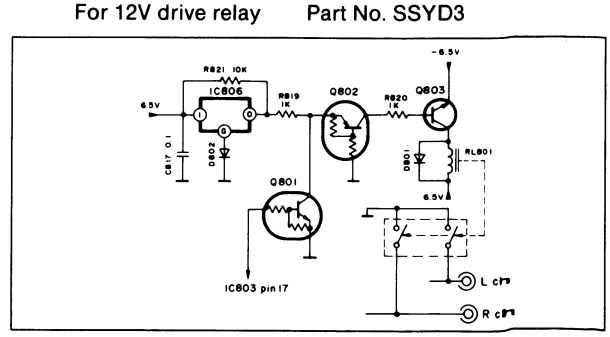
**Note:** The 6V drive relay and 12V drive relay look exactly the same. They cannot be distinguished by appearance or shape.

## ■ SCHEMATIC DIAGRAM

For 6V drive relay Part No. SSYD2




For 12V drive relay Part No. SSYD3

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# Service Manual

Supplement

COMPACT disc DIGITAL AUDIO

DIGITAL

Compact Disc Player

# SL-P310

SL-P310

**Please use this manual together with the service manual for Model No. SL-P310, Order No. HAD8607667C0.**

**Notes:**

★ The main P.C.B. of this unit was changed at the production. Be careful about this point during servicing.

**(Main changes)**

1. Mounting the muting relay circuit into main P.C.B.
2. Discontinuing of parts mounted on the foil side of P.C.B.

★ This supplement should be filed with the service manual for Model No. SL-P310, Order No. HAD8607667C0.

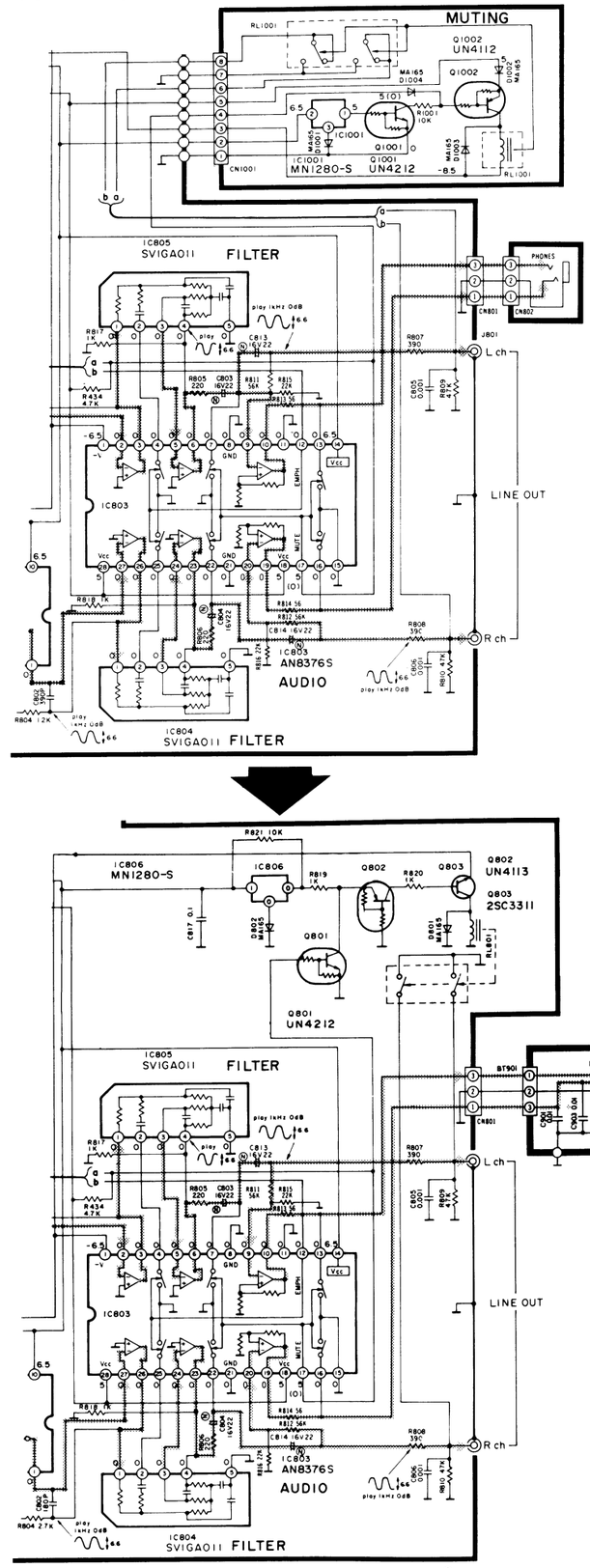
## CHANGES

## ■ REPLACEMENT PARTS LIST

| Ref. No. | Change of Part No. OLD → NEW | | Part Name & Descrption | Per Set (Pcs.) | Remarks |
|---|---|---|---|---|---|
| **INTEGRATED CIRCUITS** | | | | | |
| IC806 | – – – – – | MN1280–S | IC, Reset Signal Generator | 1 | Addition |
| IC1001 | MN1280–S | – – – – – | IC, Reset Signal Generator | 0 | Deletion |
| **TRANSISTORS** | | | | | |
| Q801 | – – – – – | UN4212 | Transistor, Switching | 1 | Addition |
| Q802 | – – – – – | UN4113 | Transistor, Switching | 1 | Addtion |
| Q803 | – – – – – | 2SC3311–Q | Transistor, Relay Drive | 1 | Addition |
| Q1001 | UN4212 | – – – – – | Transistor, Switching | 0 | Deletion |
| Q1002 | UN4112 | – – – – – | Transistor, Relay Drive | 0 | Deletion |
| **DIODES** | | | | | |
| D801 | – – – – – | MA165 | Diode | 1 | Addtion |
| D1001 ~1004 | MA165 | – – – – – | Diode | 0 | Deletion |
| **RELAYS** | | | | | |
| RL801 | SSYD2 | – – – – – | Relay, Muting | 1 | Addtion |
| RL1001 | – – – – – | SFDYG5A237P | Relay, Muting | 0 | Deletion |
| **RESISTORS** | | | | | |
| R819 | ERDS2TJ102 | – – – – – | Carbon, 1/4W, 1kΩ, ±5% | 1 | Addtion |
| R820 | ERDS2TJ102 | – – – – – | Carbon, 1/4W, 1kΩ, ±5% | 1 | Addtion |
| R821 | ERDS2TJ103 | – – – – – | Carbon, 1/4W, 10kΩ, ±5% | 1 | Addtion |
| R1001 | – – – – – | ERDS2TJ103 | Carbon, 1/4W, 10kΩ, ±5% | 0 | Deletion |
| **CAPACITOR** | | | | | |
| C817 | ECFD1H104ZF | – – – – – | Semiconductor, 50V, 0.1μF, $\pm^{80}_{20}$% | 1 | Addition |

## ■ SCHEMATIC DIAGRAM

OLD




NEW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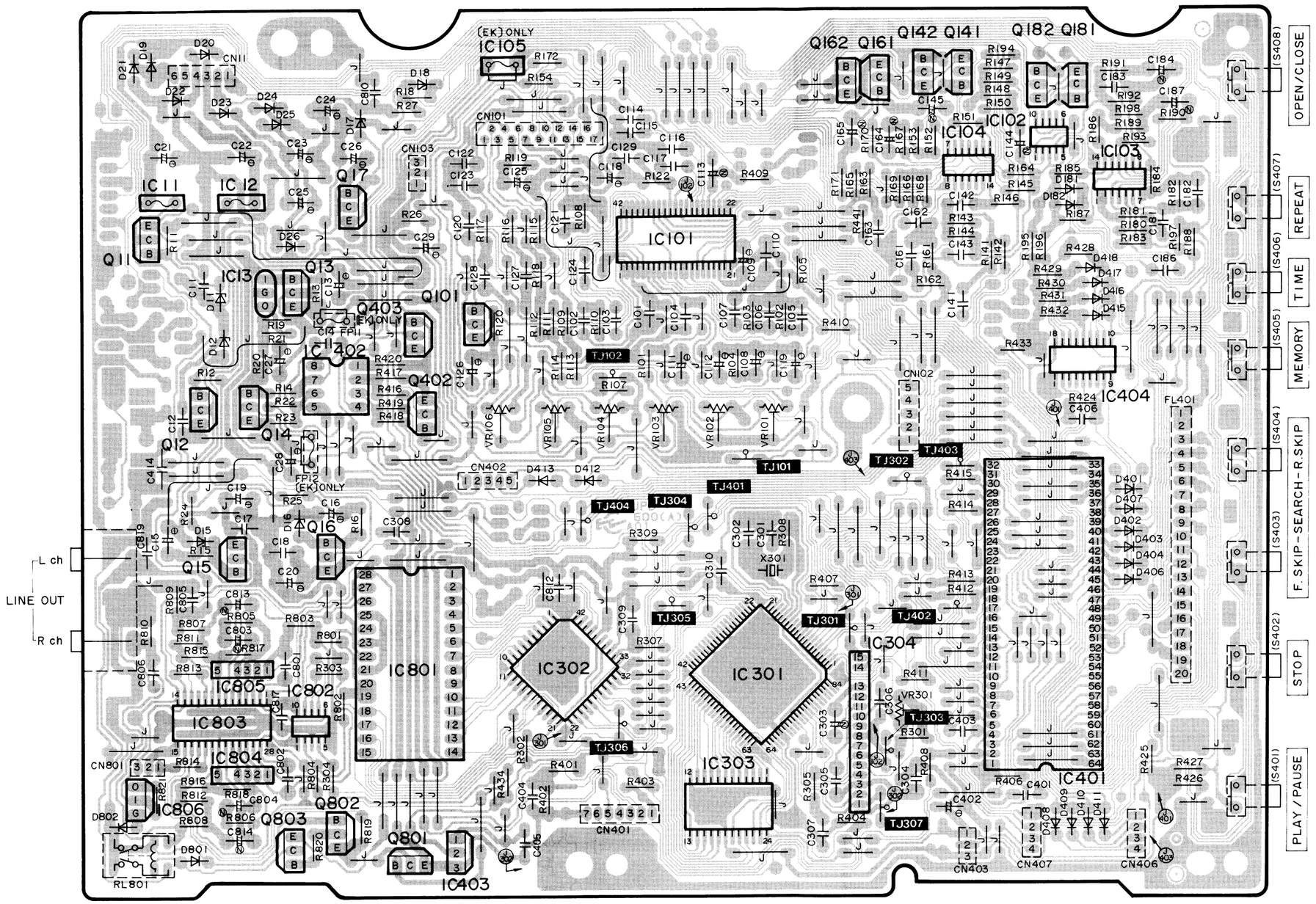
## ■ PRINTED CIRCUIT BOARD





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# ■ MESSUNGEN UND JUSTIERUNGEN Deutsch

- Die Justierung dieses Gerätes is grundsätzlich gleich wie für Modell SL-PJ11. (Die Justierpunkte sind teilweise verschieden.) Für nähere Einzelheiten dazu, siehe Service-Handbuch für Modell SL-PJ11 (Bestell-Nr. HAD 8509261G0).
- Es ist gefährlich, in den Laserstrahl zu sehen oder ihn zu berühren. (Laser-Strahlung ist unsichtbar.) Bei eingeschaltetem Gerät strahlt das Abtastsystem Laserstrahlung aus. Bei der Justierung ist dieser Punkt besonders zu beachten.

## ELEKTRISCHE JUSTIERUNG

PROVISORISCHE EINSTELLUNG JEDES DREHWIDERSTANDES

1. Die Gummikappe abnehmen.
2. Jeden Drehwiderstand der Servo-Platine wie gezeigt provisorisch einstellen.

FOKUS-VERSTÄRKUNGS-JUSTIERUNG

1. Den Niederfrequenz-Oszillator auf eine Frequenz von 750 Hz und eine Ausgangsspannung von 150 mVss einstellen und ihn an OSC und GND des Servo-Verstärkungs-Justierers anschließen.
2. CH1 und CH2 des Oszilloskops an TP1 und TP2 des Servo-Verstärkungs-Justierers anschließen. (TP3 an Masse)
   Einstellungen am Oszilloskop:
   VOLT ..... 100 mV (beide Kanäle)
   KIPP ..... 2 msec.
   EINGANG ..... Wechselstrom
3. Die Stromversorgung des Geräts einschalten.
4. Mit dem Schalter open/close den Testdisk (SZZP1014F) einlegen und auf Wiedergabe schalten.
5. Den Schaltknopf des Servo-Verstärkungsreglers (SZZP1017F) auf "2" → "3" und den on/off-Schalter auf "ON" stellen.
6. Wenn das Gerät auf Wiedergabe läuft und das 750Hz-Signal auf dem Oszilloskop angezeigt wird, VR 104 so einstellen, daß die Kurven und Amplitüden der beiden Kanäle wie in der Abbildung gezeigt gleich sind.
7. Die Stromversorgung des Geräts abschalten.

SPURLAGE-VERSTÄRKUNGS-JUSTIERUNG

1. Das Niederfrequenz-Oszilloskop auf eine Frequenz von 1,2 kHz und Ausgangsspannung von 150 mVss einstellen.
2. Die Oszilloskop-Anschlüsse wie oben vornehmen und die Einstellungen am Oszilloskop wie wie folgt vornehmen.
   Einstellungen am Oszilloskop:
   VOLT ..... 100 mV (beide Kanäle)
   KIPP ..... 0,5 msec.
   EINGANG ..... Gleichstrom
3. Die Stromversorgung des Geräts einschalten.
4. Mit dem open/close-Schalter den Testdisk (SZZP1014F) einlegen und das Gerät auf Wiedergabe stellen.
5. Den Schaltknopf des Servo-Verstärkungsreglers (SZZP1017F) auf "2" → "1" und den on/off-Schalter auf "ON" stellen.
6. Wenn das Gerät auf Wiedergabe steht und auf dem Oszilloskop das 1,2kHz-Signal dargestellt wird, muß VR 102 so eingestellt werden, daß die Kurven und Amplitüden auf beiden Kanalen wie in Abbildung gezeigt gleich sind.
7. Die Stromzufuhr zum Gerät abschalten.
8. Der Servo-Verstärkungs-Justierer wird für die weiteren Justierungen nicht gebraucht. Daher das Regelgerät entfernen und den Kurzschlußstecker von CN105 wieder in seiner ursprünglichen Position einsetzen.

BESTE AUGEN-(PD-BALANCE)-JUSTIERUNG

1. CH1 des Oszilloskopes an TJ701 (+) und TJ703 (-) der Hauptplatine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 200 mV
   KIPP ..... 0,5 µsec.
   EINGANG ..... Wechselstrom
2. Die Stromzufuhr einschalten und Band 13 (0,5 mm schwarzer Punkt) auf der Testplatte abspielen.
3. VR101 so justieren, daß das Augenmuster des HF-Signals am weitesten offen ist.

FOKUS-OFFSET-JUSTIERUNG

1. CH1 des Oszilloskops an TJ701 (+) und TJ703 (-) an die Hauptplatine anschließen.
   CH2 an TJ102 der Servo-Platine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 500 mV (CH1)
   100 mV (CH2)
   KIPP ..... 0,5 µsec.
   EINGANG ..... Wechselstrom (CH1)
   Gleichstrom (CH2)
   BETRIEBSART .. NORM (Schaltgriff auf CH1)
2. Band 13 (0,5mm großer schwarzer Punkt) auf der Testplatte abspielen.
3. So triggern, daß eine Wellenform wie gezeigt auf dem Oszilloskop erscheint, und VR 105 so justieren, daß die HF-Senkung von CH1 und die Wellenform-Amplitude von CH2 minimal werden.

SPURLAGE-OFFSET-JUSTIERUNG

1. CH1 des Oszilloskops ar TJ701 (+) und TJ703 (-) an die Hauptplatine anschließen.
   CH2 an TJ101 der Servo-Platine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 500 mV (CH1)
   100 mV (CH2)
   KIPP ..... 0,5 µsec.
   EINGANG ..... Wechselstrom (CH1)
   Gleichstrom (CH2)
   BETRIEBSART .. NORM (Schaltgriff auf CH1)
2. Band 13 (0,5mm großer schwarzer Punkt) auf der Testplatte abspielen.
3. So triggern, daß eine Wellenform wie gezeigt auf dem Oszilloskop erscheint, und VR 103 so justieren, daß die HF-Senkung von CH1 und die Wellenform-Amplitude von CH2 minimal werden.

PLL-JUSTIERUNG

1. CH1 des Oszilloskops an R809 (+) und Chassis (-) der Hauptplatine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 1 V
   KIPP ..... 1 msec
   EINGANG ....., Gleichstrom
2. Band 13 (0,5mm großer schwarzer Punkt) auf der Testplatte abspielen.
3. VR701 unter Beobachtung des Oszilloskops justieren und in die Mitte des Bereichs einstellen, wo die Wellenform stabil ist.

PRÜFUNG DES WIEDERGABEBETRIEBS NACH DER JUSTIERUNG

- Prüfung des Überspring-Suchlaufs

1. Eine gewöhnliche Platte abspielen.
2. Die Skip-Taste drücken, um den Überspring-Suchlauf zu prüfen. (Im Vorwärts- und Rückwärts-Betrieb prüfen.)

- Prüfung des manuellen Suchlaufs

1. Eine gewöhnliche Platte abspielen.
2. Die Taste für manuellen Suchlauf drücken und prüfen, ob glatter Suchlauf mit niedriger und hoher Geschwindigkeit möglich ist. (Im Vorwärts- und Rückwärts-Betrieb prüfen.

- Prüfen auf Defekte

1. Programm 13 der Testplatte abspielen und überprüfen, daß kein Tonausfall oder Rauschen auftritt. (Schwarzer Punkt)
2. Programm 14 der Testplatte abspielen und überprüfen, daß kein Tonausfall oder Rauschen auftritt. (Fingerabdruck)

## JUSTIERUNG DES OPTISCHEN ABTASTSYSTEMS

PROVISORISCHE EINSTELLUNG JEDES DREHWIDERSTANDES

1. Die Gummikappe abnehmen.
2. Jeden Drehwiderstand der Servo-Platine wie gezeigt provisorisch einstellen.

JUSTIERUNG DER PLATTENTELLERHÖHE

1. Das Oszilloskop an TJ101 (+) und Chassis (-) der Servo-Platine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 100 mV
   KIPP ..... 5 msec.
   EINGANG ..... Gleichstrom
2. Den Netzschalter einschalten und die Testplatte auflegen.
3. Die Gleichstrom-Nullbalance des Oszilloskops einstellen.
4. Die Testplatte abspielen.
5. Die Ladeeinheit während des Abspielens von Hand aufhalten.
   Vorsicht: Die Einheit horizontal und frei von Vibration halten.
6. Die Justierschraube so drehen, daß die Spannung in der Wellenformmitte des Oszilloskops 0V beträgt.
   Vorsicht: Die Justierschraube nicht übermäßig drehen.
7. Nach erfolgter Justierung ist die Justierschraube mit Lack zu sichern.

MECHANISCHE JUSTIERUNG

1. Das Oszilloskop an TJ701 (+) und TJ703 (-) der Hauptplatine anschließen.
   Einstellungen am Oszilloskop:
   VOLT ..... 0,5 V
   KIPP ..... 0,5 µsec.
   EINGANG ..... Wechselstrom.
2. Den Netzschalter einschalten und die Testplatte auflegen.
3. Die Testplatte abspielen.
4. Das Gerät wie gezeigt aufstellen und die Ladeeinheit frei von Vibration halten.
5. Die Steckverbindungen (CN101 - 103) der Servo-Platine herausziehen.
6. Abwechselnd die beiden Justierschrauben des optischen Abtastsystems mit Sechskant-Schraubschlüssel (SZZP1044C) drehen, so daß das Augenmuster der Wellenform (HF-Signal am Oszilloskop am weitesten offen wird.
   Vorsicht:

1. Darauf achten, daß die flexible Platine des optischen Abtastsystems bei der Justierung nicht beschädigt wird.
2. Vor dem Installieren der Servo-Platine ist darauf zu achten, daß der Kondensator auf der Platine herabgelegt ist.

ELEKTRISCHE JUSTIERUNG

1. Die Ladeeinheit ins Chassis einpassen.
2. So vorgehen, wie im Abschnitt "Elektrische Justierung" vorstehend beschrieben.

# ■ MESURAGES ET REGLAGES Français

- Le réglage de cet appareil est, dans son principe, le même que pour le SL-PJ11. (Les points de réglage ne sont que partiellement différents.) Pour les détails, se référer au Manuel de Service du SL-PJ11 (N° d'ordre HAD 850926160).
- Il est très dangereux de regarder ou de toucher le faisceau à laser. (Le rayonnement du laser est invisible.) Avec l'appareil mis "en marche" le rayonnement du laser est émis de la lentille du lecteur de disques. Prendre particulièrement garde pendant les mises au point.

## MISES AU POINT ELECTRIQUES

REGLAGE TEMPORAIRE DE CHAQUE RESISTANCE VARIABLE

1. Retirer le capuchon en caoutchouc.
2. Régler temporairement chaque résistance variable de la plaquette à circuits imprimés d'asservissement, comme il ést montre.

REGLAGE DE L'AMPLIFICATION DE FOCALISATION

1. Régler l'oscillateur à basse fréquence sur une fréquence de 750 Hz et une tension de sortie de 150 mV crête-à-crête, et le raccorder à "OSC" (oscillateur) et "GND" (terre) de l'ajusteur d'amplification servomécanique.
2. Raccorder le canal 1 et le canal 2 de l'oscilloscope à TP1 et TP2 de l'ajusteur d'amplification servomécanique. (TP3 relié à la terre.)
   Réglage de l'oscilloscope: TENSION ..... 100 mV (les deux canaux)
   BALAYAGE ..... 2 msec.
   ENTREE ..... C.A.
3. Mettre en marche l'interrupteur d'alimentation du lecteur.
4. Installer le disque d'essai (SZZP1014F) dans le dispositif de support pour disque en utilisant la touche d'ouverture/fermeture et régler sur le mode de lecture.
5. Régler le commutateur rotatif de l'ajusteur d'amplification asservie (SZZP1017F) sur "2" → "3" et le commutateur de marche/arrêt sur la position "ON" (marche).
6. Régler le lecteur sur le mode d'audition et le signal de 750 Hz sera affiché sur l'oscilloscope. Puis, régler VR104 de telle sorte que les formes d'ondes et les amplitudes des deux canaux deviennent égales, comme il est montré à la figure.
7. Mettre hors circuit l'interrupteur d'alimentation en courant du lecteur.

REGLAGE DE L'AMPLIFICATION D'ALIGNEMENT

1. Régler l'oscilloscope à basse fréquence sur une fréquence de 1,2 kHz et une tension de 150 mV crête-à-crête.
2. Changer le réglage de l'oscilloscope en effectuant le même raccordement de l'oscilloscope que celui mentionné ci-dessus.
   Réglage de l'oscilloscope: TENSION ..... 100 mV (les deux canaux)
   BALAYAGE ..... 0.5 msec.
   ENTREE ..... C.C.
3. Mettre en marche l'interrupteur d'alimentation du lecteur.
4. Installer le disque d'essai (SZZP1014F) dans le dispositif de support pour disque en utilisant la touche d'ouverture/fermeture et régler sur le mode de lecture.
5. Régler le commutateur rotatif de l'ajusteur d'amplification asservie (SZZP1017F) sur "2" → "1" et le commutateur de marche/arrêt sur la position "ON" (marche).
6. Régler le lecteur sur le mode d'audition et le signal de 1,2 kHz sera indiqué sur l'oscilloscope. Puis, régler VR102 de telle sorte que les formes d'ondes et les amplitudes des deux canaux soient égales, comme il est montré à la figure.
7. Mettre hors circuit l'interrupteur d'alimentation du lecteur.
8. L'ajusteur d'amplification servomécanique n'est pas nécessaire pour les autres réglages. Aussi, débrancher le contrôleur et insérer le connecteur de court-circuitage CN105 à sa position initiale.

REGLAGE VISUEL LE MEILLEUR (EQUILIBRAGE DU DETECTEUR OPTIQUE)

1. Raccorder le canal 1 de l'oscilloscope à TJ701 (+) et à TJ703 (-) de la plaquette à circuits imprimés principale.
   Réglage de l'oscilloscope: TENSION ..... 200 mV
   BALAYAGE ..... 0.5 µsec.
   ENTREE ..... C.A.
2. Mettre en marche l'interrupteur d'alimentation et faire jouer la plage 13 (zone d'interférence de 0,5 mm) du disque d'essai.
3. Régler VR101 de telle sorte que l'oscillogramme visuel du signal de haute fréquence soit le plus largement ouvert possible.

REGLAGE DU DECENTREMENT DE FOCALISATION

1. Raccorder le canal 1 de l'oscilloscope à TJ701 (+) et à TJ703 (-) de la plaquette à circuits imprimés principale. Raccorder le canal 2 à TJ102 de la plaquette à circuits imprimés d'asservissement.
   Réglage de l'oscilloscope: TENSION ..... 500 mV (canal 1)
   100 mV (canal 2)
   BALAYAGE ..... 0.5 µsec.
   ENTREE ..... C.A. (canal 1)
   C.C. (canal 2)
   MODE ..... NORM (Déclencheur sur la canal 1)
2. Faire jouer la plage 13 (zone d'interférence de 0,5 mm) du disque d'essai.
3. Déclencher de telle sorte que la forme d'onde, telle qu'elle est montrée, apparaisse sur l'oscilloscope, et régler VR105 pour réduire au minimum l'abaissement de haute fréquence sur le canal 1 et l'amplitude de l'onde sur le canal 2.

REGLAGE DU DECENTREMENT D'ALIGNEMENT

1. Raccorder le canal 1 del l'oscilloscope à TJ701 (+) et à TJ703 (-) de la plaquette à circuits imprimés principale. Raccorder le canal 2 à TJ101 de la plaquette à circuits imprimés d'asservissement.
   Réglage de l'oscilloscope: TENSION ..... 500 mV (canal 1)
   100 mV (canal 2)
   BALAYAGE ..... 0.5 µsec.
   ENTREE ..... C.A. (canal 1)
   C.C. (canal 2)
   MODE ..... NORM (Déclencheur sur la canal 1)
2. Faire jouer la plage 13 (zone d'interférence de 0,5 mm) du disque d'essai.
3. Déclencher de telle sorte que la forme d'onde, telle qu'elle est montrée, apparaisse sur l'oscilloscope, et régler VR103 pour réduire au minimum l'abaissement de haute fréquence sur le canal 1 et l'amplitude de l'onde sur le canal 2.

REGLAGE DU CIRCUIT D'ASSERVISSEMENT DE PHASE

1. Raccorder le canal 1 de l'oscilloscope à R809 (+) et au châssis (-) de la plaquette à circuits imprimés principale.
   Réglage de l'oscilloscope: TENSION ..... 1V
   BALAYAGE ..... 1 msec.
   ENTREE ..... C.C.
2. Faire jouer la plage 13 (zone d'interférence de 0,5 mm) du disque d'essai.
3. Ajuster VR701 tout en observant l'oscilloscope et le régler au milieu de la plage à l'endroit où la forme d'onde est stable.

VERIFICATION DU FONCTIONNEMENT DE L'AUDITION APRES LE REGLAGE

- Vérification de la recherche par sauts.

1. Faire jouer un disque normal.
2. Appuyer sur la touche de saut pour vérifier la recherche par sauts. (A la fois sur les modes de l'avant et de l'arrière.)

- Vérification de la recherche manuelle

1. Faire jouer un disque normal.
2. Appuyer sur la touche de recherche manuelle pour vérifier que la recherche manuelle peut être effectuée facilement et à des vitesses faibles et élevées. (A la fois sur les modes de l'avant et de l'arrière.)

- Vérification pour des défauts

1. Faire jouer la plage 13 du disque d'essai pour vérifier qu'il n'y ait pas de parasites ou d'omission du son. (Zone d'interférence)
2. Faire jouer la plage 14 du disque d'essai pour vérifier qu'il n'y ait pas de parasites ou d'omission du son. (Marque de doigts)

## REGLAGE DU LECTEUR DE DISQUES OPTIQUE

REGLAGE TEMPORAIRE DE CHAQUE RESITANCE VARIABLE

1. Retirer le capuchon en caoutchouc.
2. Régler temporairement chaque résistance variable de la plaquette à circuits imprimés d'asservissement, comme il est montré.

REGLAGE DE LA HAUTEUR DE LA PLATINE

1. Raccorder l'oscilloscope à TJ101 (+) et au châssis (-) de la plaquette à circuits imprimés d'asservissement.
   Réglage de l'oscilloscope: TENSION ..... 100 mV
   BALAYAGE ..... 5 msec.
   ENTREE ..... C.C.
2. Mettre en marche l'interrupteur d'alimentation et installer le disque d'essai.
3. Régler sur l'oscilloscope pour un équilibrage sur zéro C.C.
4. Faire jouer le disque d'essai.
5. Soutenir le dispositif de chargement à la main pendant l'audition.
   Avertissement: Tenir horizontalement l'appareil sans lui donner de secousses.
6. Tourner la vis de réglage de telle sorte que la tension au centre de la forme d'onde de l'oscilloscope soit de OV.
   Avertissement: Ne pas tourner excessivement la vis de réglage.
7. Après le réglage, appliquer un agglutinant pour blocage de vis à la vis de réglage.

REGLAGE MECANIQUE

1. Raccorder l'oscilloscope à TJ701 (+) et à TJ703 (-) de la plaquette à circuits imprimés principale.
   Réglage de l'oscilloscope: TENSION ..... 0.5 V
   BALAYAGE ..... 0.5 μsec.
   ENTREE ..... C.A.
2. Mettre en marche l'interrupteur d'alimentation et installer le disque d'essai.
3. Faire jouer le disque d'essai.
4. Installer l'appareil comme il est montré, en prenant garde de ne pas donner de secousses au dispositif de chargement.
5. Retirer les connecteurs (CN101 - 103) de la plaquette à circuits imprimés d'asservissement

6. Tourner alternativement les vis de réglage (2 pièces) du lecteur de disques optique avec une clé hexagonale (SZZP1044C) de telle sorte que l'oscillogramme visuel de la forme d'onde (signal de haute fréquence) de l'oscilloscope soit le plus largement ouvert possible.

Avertissements:
1. Prendre garde de ne pas endommager le support flexible du lecteur de disques optique pendant le réglage.
2. Avant d'installer la plaquette à circuits imprimés d'asservissement, s'assurer que le condensateur sur le support soit déposé.

REGLAGE ELECTRIQUE
1. Installer le dispositif de chargement au châssis.
2. Suivre la procédure des "Mises au point électriques" mentionneé précédemment.

## ■ MEDICIONES Y AJUSTES — Español

- El ajuste de esta unidad es básicamente el mismo que para SL-PJ11. (Los puntos de ajuste son parcialmente diferentes,)
  Para detalles, referir al Manual de Servicio de SL-PJ11 (No. de Pedido HAD 850926160).
- Es muy peligroso mirar o tocar el haz de laser. (La radiación de laser es invisible.) Con la unidad prendida, la radiación de laser es emitida desde la lente captadora. Tener cuidado durante los ajustes en particular.

### AJUSTE ELECTRICO

PUESTA TEMPORAL DE CADA VR
1. Remover la cubierta de goma.
2. Temporalmente ajustar cada VR de P.C.B. (tablero de circuitos impresos) servo como se muestra.

AJUSTE DE GANANCIA DE ENFOQUE
1. Ajustar el oscilador de baja frecuendia a frecuencia de 750 Hz y voltaje de salida de 150 mVp-p, y conectarlo a OSC y GND (tierra) de ajustador de servoganancia.
2. Conectar CH1 y CH2 del osciloscopio a TP1 y TP2 del ajustador de servoganancia. (TP3 puesto a tierra)
   Puesta de osciloscopio: VOLT ..... 100 mV (ambos canales)
   BARRIDO ..... 2 mseg.
   ENTRADA ..... CA
3. Encender el interruptor de la fuente de energia del tocadiscos.
4. Poner la disqueta de prueba (SZZP1014F) en su soporte con la llave de abierto/cerrado y en el modo de audición.
5. Fijar el interruptor rotativo del ajustador de ganancia de servo (SZZP1017F) en "2" → "3" y en posición "ENCENDIDO".
6. En el osciloscopio se mostrarán el modo de audición del tocadiscos y la señal de 750 Hz, después de lo cual hay que ajustar VR 104 de manera que las formas de onda y las amplitudes de ambos canales sean iguales a las que se muestran en la figura.
7. Apagar el interruptor de la fuente de anergia del tocadiscos.



AJUSTE DE GANANCIA DE SEGUIMIENTO
1. Ajustar el osciloscopio de baja frecuencia a frecuencia de 1,2 kHz y voltaje de salida de 150 mVp-p.
2. Cambiar la puesta de osciloscopio, haciendo la conexión del osciloscopio la misma que la mencionada arriba.
   Puesta de osciloscopio: VOLT ..... 100 mV (ambos canales)
   BARRIDO ..... 0,5 mseg.
   ENTRADA ..... CC
3. Encender el interruptor de fuente de energia del tocadiscos.
4. Poner la disqueta de prueba (SZZP1014F) en su soporte por medio de la llave de abierto/cerrado y en el modo de audición.
5. Fijar el interruptor rotativo del ajustador de ganancia de servo (SZZP1017F) en "2" → "1" y el interruptor de encendido/apagado en la posición de "Encendido".
6. En el osciloscopio se mostrarán el modo de audición del tocadiscos y la señal de 1,2kHz, des-pués de lo cual hay gue ajustar VR102 de manera gue la formas de onda y las amplitudes de ambos canales sean iguales a las que se muestran en la figura.
7. Apagar el interruptor de fuente de energia del tocadiscos.
8. El ajustador de servoganancia no es necesario para otros ajustes. Por lo tanto, desconectar el controlador e insertar el conector corto de CN105 a la posición original.

AJUSTE DE OJO OPTIMO (EQUILIBRIO DE PD (diferencia de potencia) )
1. Conectar CH1 del osciloscopio a TJ701 (+) y TJ703 (-) del P.C.B. principal.
   Puesta de osciloscopio: VOLT ..... 200 mV
   BARRIDO ..... 0,5 μseg.
   ENTRADA ..... CA
2. Prender la fuente de alimentación y hacer funcionar la banda 13 (punto negro de 0,5 mm) del disco de prueba.
3. Ajustar VR 101 de manera que el patrón de ojo de señal RF sea lo más ampliamente abierto.

AJUSTE DE DESVIACION DE ENFOQUE
1. Conectar CH1 del osciloscopio a TJ701 (+) y TJ703 (-) al P.C.B. principal.
   Conectar CH2 a TJ102 de P.C.B. servo.
   Puesta de osciloscopio: VOLT ..... 500 mV (CH1)
   100 mV (CH2)
   BARRIDO .... 0,5 μseg.
   ENTRADA .... CA (CH1)
   CC (CH2)
   MODALIDAD .. NORM (Disparar en CH1)
2. Hacer funcionar la banda 13 (punto negro de 0,5 mm) de disco de prueba.
3. Disparar de manera que la forma de onda, como mostrada, aparezca en el osciloscopio, y ajustar VR105 para minimizar la depresión de RF en CH1 y la amplitud de onda en CH2.

AJUSTE DE DESVIACION DE SEGUIMIENTO
1. Conectar CH1 del osciloscopio a TJ701 (+) y TJ703 (-) al P.C.B. principal. Conectar CH2 a TJ101 de P.C.B. servo.

Puesta de osciloscopio: VOLT ..... 500 mV (CH1)
100 mV (CH2)
BARRIDO ..... 0,5 μseg.
ENTRADA ..... CA (CH1)
CC (CH2)
MODALIDAD .... NORM (Disparar en CH1)

2. Hacer funcionar la banda 13 (punto negro de 0,5 mm) de disco de prueba.
3. Disparar de manera que la forma de onda, como mostrada, aparezca en el osciloscopio, y ajustar VR103 para minimizar la depresión de RF en CH1 y la amplitud de onda en CH2.

AJUSTE DE PLL (bucle de enganche de fase)

1. Conectar CH1 del osciloscopio a R809 (+) y chasis (-) del P.C.B. principal.
   Puesta de osciloscopio: VOLT ..... 1V
   BARRIDO ..... 1 mseg.
   ENTRADA ..... CC
2. Hacer funcionar la banda 13 (punto negro de 0,5 mm) del disco de prueba.
3. Ajustar VR701, mientras observa el osciloscopio, y ponerlo en el medio de la gama donde la forma de onda es estable.

COMPROBACION DE OPERACION DE FUNCION DESPUES DEL AJUSTE

- Comprobación de exploración de salto

1. Tocar un disco ordinario.
2. Apretar el botón de salto para comprobar la exploración de salto.
   (Tanto en la modalidad directa como en la inversa).

- Comprobación de exploración manual

1. Tocar un disco ordinario.
2. Apretar el botón de exploración manual para comprobar que la exploración manual se puede hacer suavemente a velocidades bajas y altas.
   (Tanto en la modalidad directa como en la inversa).

- Comprobación por defecto.

1. Hacer funcionar la banda 13 del disco de prueba para comprobar que no hay salto de sonido o ruido. (Punto negro)
2. Hacer funcionar la banda 14 del disco de prueba para comprobar que no hay salto de sonido o ruido. (Huella digital)

## AJUSTE DE TOMA OPTICA

PUESTA TEMPORAL DE CADA VR

1. Remover la cubierta de goma.
2. Temporalmente ajustar cada VR del P.C.B. servo como se muestra.

AJUSTE DE ALTURA DE PLATO GIRADISCOS

1. Conectar el osciloscopio a TJ101 (+) y chasis (-) de P.C.B. servo.
   Puesta de osciloscopio: VOLT ..... 100 mV
   BARRIDO ..... 5 mseg.
   ENTRADA ..... CC
2. Prender el interruptor de alimentación y montar el disco de prueba.
3. Ajustar el equilibrio cero de CC de osciloscopio.
4. Tocar el disco de prueba.
5. Levantar la unidad de carga con la mano durante la función.
   Precaución: Tener la unidad horizontalmente sin hacerla vibrar.
6. Girar el tornillo de ajuste de manera que el voltaje en el centro de forma de onda sea OV. Precaución: No girar el tornillo de ajuste excesivamente.
7. Después del ajuste, aplicar adherencia de cierre de tornillo al tornillo de ajuste.



AJUSTE MECANICO

1. Conectar el osciloscopio a TJ701 (+) y TJ703 (-) al P.C.B. principal.
   Puesta de osciloscopio: VOLT ..... 0,5 V
   BARRIDO ..... 0,5 useg.
   ENTRADA ..... CA
2. Prender el interruptor de alimentación y montar el disco de prueba.
3. Tocar el disco de prueba.
4. Poner la unidad, como se muestra, con cuidado de no hacer vibrar la unidad de carga.
5. Sacar los conectores (CN101 - 103) del P.C.B. servo.
6. Alternativamente girar los tornillos de ajuste de toma óptica (2 pzas.) con llave hexagonal (SZZP1044C) de manera que el patrón de ojo de la forma de onda (señal RF) del osciloscopio esté abierto lo más posible.

Precauciones:

1. Tener cuidado de no dañar el tablero flexible de toma óptica durante el ajuste.
2. Antes de instalar el P.C.B. servo, asegurarse de que el condensador en el tablero está recostado.

AJUSTE ELECTRICO

1. Instalar la unidad de carga al chasis.
2. Seguir el procedimiento de "Ajuste eléctrico" mencionado más arriba.



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